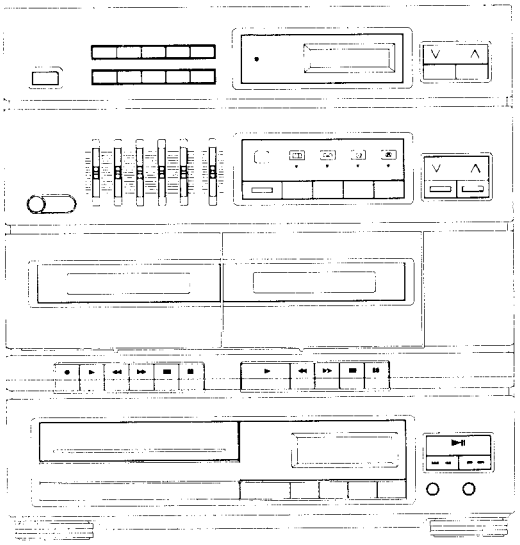
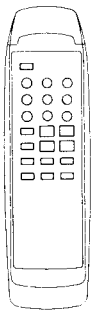
SAMSUNG Electronics

SERVICE MANUAL
MODEL: SCM-7800

HI-FI MUSIC CENTER WITH COMPACT DISC PLAYER





SPECIFICATION

GENERAL SECTION

Power Consumption	:	85W
Dimension	:	350(W) x 352(H) x 282(D)mm
Weight (NET)	:	6.6 Kg
Power source	:	See the label rating

RADIO SECTION

LW BAND

Frequency Range	:	146KHz ~ 290KHz
Usable Sensitivity	:	1000 μV
Signal to Noise Ratio	:	35dB

MW BAND

Frequency Range	:	522KHz ~ 1611KHz
Usable Sensitivity	:	600 μV
Signal to Noise Ratio	:	40 dB

SW BAND

Frequency Range	:	5.8MHz ~ 18MHz
Usable Sensitivity	:	100 μV
Signal to Noise Ratio	:	32 dB

FM BAND

Frequency Range	:	87.5MHz ~ 108MHz
Usable Sensitivity	:	6 μV
Signal to Noise Ratio	:	60 dB
Total Harmonic Distortion	:	0.3%
Separation	:	35 dB

TAPE SECTION(RECORD/PLAYBACK)

RECORD/PLAYBACK

Frequency Range	:	125Hz ~ 8KHz
Signal to Noise Ratio	:	40 dB
Separation	:	35 dB
Total Harmonic Distortion	:	1.5%
Erasing Effect	:	60 dB
Wow & Flutter	:	0.3%

COMPACT DISC PLAYER SECTION

Signal to Noise Ratio	:	75 dB
Total Harmonic Distortion	:	0.05%
Channel Separation	:	50 dB
D/A Conversion	:	16 bits

* *Design and specifications are subject to change upon improvement without prior notice.*
* *Frequency range in radio section can be a little different from the above in accordance with frequency step or region.*

CONTENTS

■ SAFETY PRECAUTION 2

■ SERVICING NOTE 3

■ LOCATION OF CONTROLS
1. FRONT 4
2. REAR 5
3. REMOTE CONTROL 6

■ DISASSEMBLY INSTRUCTION 7

■ BASIC CIRCUIT OPERATION
1. TUNER 8
2. TAPE 8
3. CD 9

■ TROUBLE SHOOTING
1. MAIN 14
2. CD 16

■ ADJUSTMENT
1. TUNER 18
2. TAPE 20
3. CD 21

■ BLOCK DIAGRAM 22

■ SCHEMATIC DIAGRAM 23

■ WIRING DIAGRAM 26

■ IC & TR INTERNAL DIAGRAM
1. MAIN 29
2. CD 30

■ EXPLODED VIEW
1. CD DECK ASSEMBLY 34
2. CASSETTE DECK ASSEMBLY 36
3. MAIN 37

■ ELECTRICAL PARTS LIST 40

■ ABBREVIATION 43

■ SAFETY PRECAUTION

1. CLASS 1 LASER PRODUCT

This compact disc player is classified as a CLASS 1 laser product.

2. LASER WARNING LABEL

The label shown below may be affixed or not according to country.

(UL)

This Product Compiles with DHHS Rules 21CFR, Sub chapter J.At date of Manufacture.

(CSA)

CERTIFIED ONLY TO CANADIAN ELECTRICAL CODE.

CERTIFIE EN VERTU DU CODE CANADIAN DE LELETRICITE SEULEMENT

(EU)

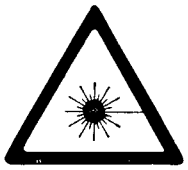
CLASS 1
LASER PRODUCT

Location : Enclosure back.

(SCAN)

ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

(EU)



UL	:	Manufactured for U.S.A. Market.
CSA	:	Manufactured for Canadian Market.
EU	:	Manufactured for European Market
SCAN	:	Manufactured for Scandinavian Market.

Location : on the disc clamper or inner side of CD door or nearby CD chassis.

3. LASER BEAM WARNING

ADVERSEL — USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING — OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRR ÄR URKOPPLAD. STRALEN ÄR FARLIG.

VARITUS — LAITE SISÄLTÄA LASERDIODIN, JOKA LÄHETTÄÄ NÄKYMÄTÖNTA SILMILLE VAARALLISTA LASERSATEILYÄ.

CAUTION — INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.

4. LASER DIODE SPECIFICATION (OPTICAL PICK-UP)

- o Material: AlGaAs
- o Wavelength: 760-800mm
- o Emission duration: Continuous
- o Laser Output: 0.2mW
  - * This output is the value measured at distance 1.6mm from the objective lens surface on the optical pick-up block.
- o Classification: CLASS 1

5. WARNING FOR SERVICING

WARNING: When servicing, do not approach the LASER exit with the eye too closely. In case it is necessary to confirm LASER beam emission, be sure to observe from a distance of more than 30cm from the surface of the objective lens on the optical pick-up block.

VARNING: När underhållningsarbeten utförs, närma dig försiktigt och se inte på laserutstrålningen på för näre häll. Ifall det är nödvändigt att betrygga laserstrålens utströmning. Var säker att kontrollera detta från ett avstånd av mer än 30cm (11.81 inch.) från den objektiva linsens yta på den optiska utsåndningspunkten.

ADVARSEL: Når repareringsarbejdet udfoeres, naerm dig forsigtigt og se ikke på laserudstrålingen på for naer hånd. I tilfaeldet at det er noedvaendigt at bestemme laserstrålens udstråling. Vaer sikker på kontrollere dette fra en afstand af mere end 30cm (11.81 inch.) fra den objektive linses overflade på den optiske udsendningspunkt.

VAROITUS: Silmiä on varottava viemästä liian läbeiie Laser-poistokanavaa huoiion aikana. Jos on välttämätöntä varmistaa Laser-Säteen päästö, pysyttels sitä tarkasteltaessa vähintään 30cm etäiyydellä optisen lukon objecktiivilinssin pinnasta.

■ SERVICING NOTE

1. Prevent shock hazard by unplugging power supply cord before opening cabinet.
2. Avoid repairing under direct sunshine and heat which may cause cabinet, transistor and IC to be transformed or misoperate.
3. Use a soft cotton swab moistened with warm water or neutral cleaner when parts of unit need to be cleaned.
4. When replacing parts with safety features built in, be sure to use specified parts with same specs only.
5. Avoid repairing the set near TV or any other magnetic forces.
6. Disconnect plug from wall socket during electric storm to reduce the risk of damage.
7. Be careful of electrostatic source when using control IC.
8. Be sure not to separate the pick-up from the unit.

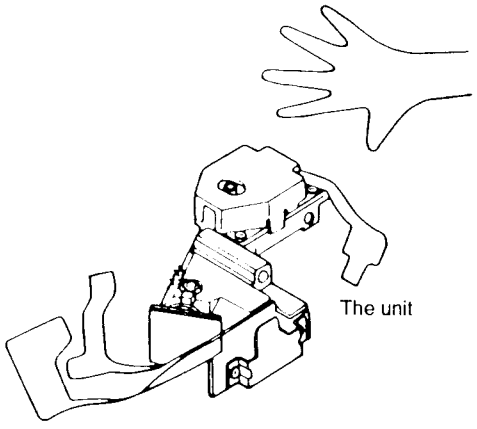
HANDLING THE OPTICAL PICK-UP

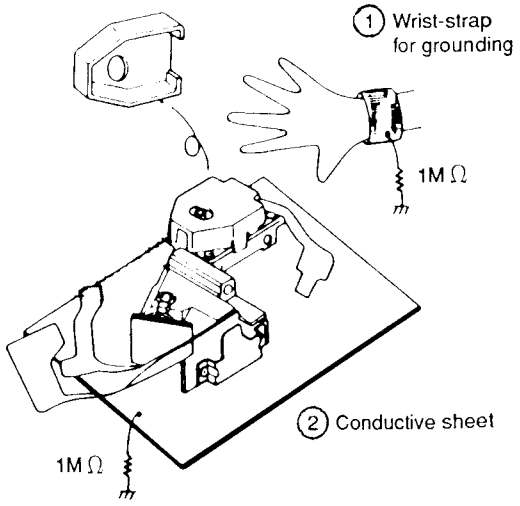
The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.

1. Place a conductive sheet on the work bench (The black sheet used as wrapping for repair parts).
2. Place the set on the conductive sheet so that the chassis is grounded to the sheet.
3. Place your hands on the conductive sheet (This gives them the same ground as the sheet).
4. Remove the optical pick up block.
5. Perform work on top of the conductive sheet.
   Be careful not to let your clothes or any other static sources to touch the unit.

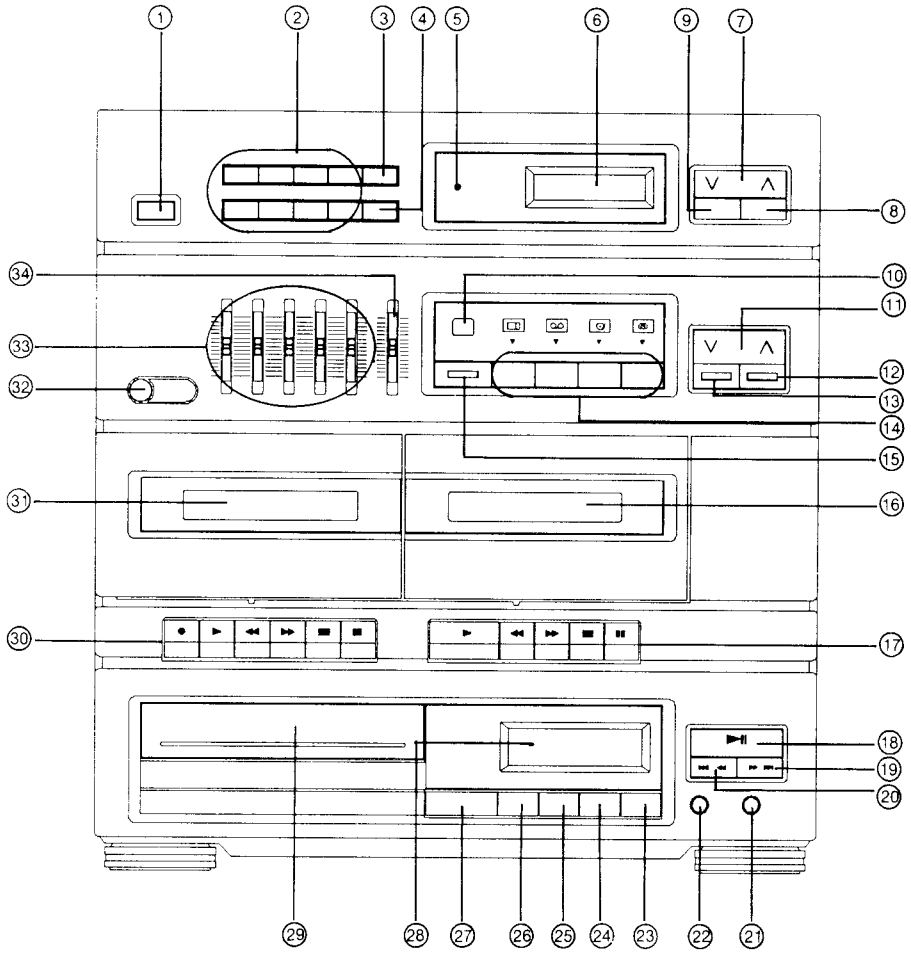
   * Be sure to put on a wrist strap grounded to the sheet.
   * Be sure to lay a conductive sheet made of copper etc. which is grounded to the table.





■ LOCATION OF CONTROLS

1. FRONT



1. POWER BUTTON
2. PRESET STATION BUTTON
3. TIMER ON, AUTO/MANUAL BUTTON
4. MEMORY BUTTON
5. FM STEREO INDICATOR
6. TIMER/TUNER DISPLAY
7. TUNING UP/DOWN BUTTON
8. MODE BUTTON
9. BAND BUTTON
10. REMOTE SENSOR
11. VOLUME UP/DOWN BUTTON
12. HI-SPEED DUBBING SWITCH
13. TAPE SELECTOR SWITCH
14. FUNCTION SELECTOR BUTTON
15. C.F.B.S BUTTON
16. B DECK DOOR
17. B DECK
    - ▶ PLAY BUTTON
    - ◀◀ REWIND BUTTON
    - ▶▶ FAST FORWARD BUTTON
    - ■ STOP/EJECT BUTTON
    - ▮▮ PAUSE BUTTON
18. PLAY/PAUSE BUTTON (▶II)
19. F.SKIP/SEARCH BUTTON (▶▶ ▶▶I)
20. BACK SKIP/SEARCH BUTTON (I◀◀ ◀◀)
21. SHUFFLE PLAY BUTTON
22. INTRO SCAN BUTTON
23. STOP/CLEAR BUTTON
24. PROGRAM BUTTON
25. REPEAT BUTTON
26. DISPLAY BUTTON
27. OPEN/CLOSE BUTTON
28. CD FUNCTION DISPLAY
29. CD DOOR
30. A DECK
    - ● RECORDING BUTTON
    - ▶ PLAY BUTTON
    - ◀◀ REWIND BUTTON
    - ▶▶ FAST FORWARD BUTTON
    - ■ STOP/EJECT BUTTON
    - ▮▮ PAUSE BUTTON
31. A DECK DOOR
32. PHONE JACK
33. FIVE BAND EQUALIZER
34. BALANCE

* How to set the current time.

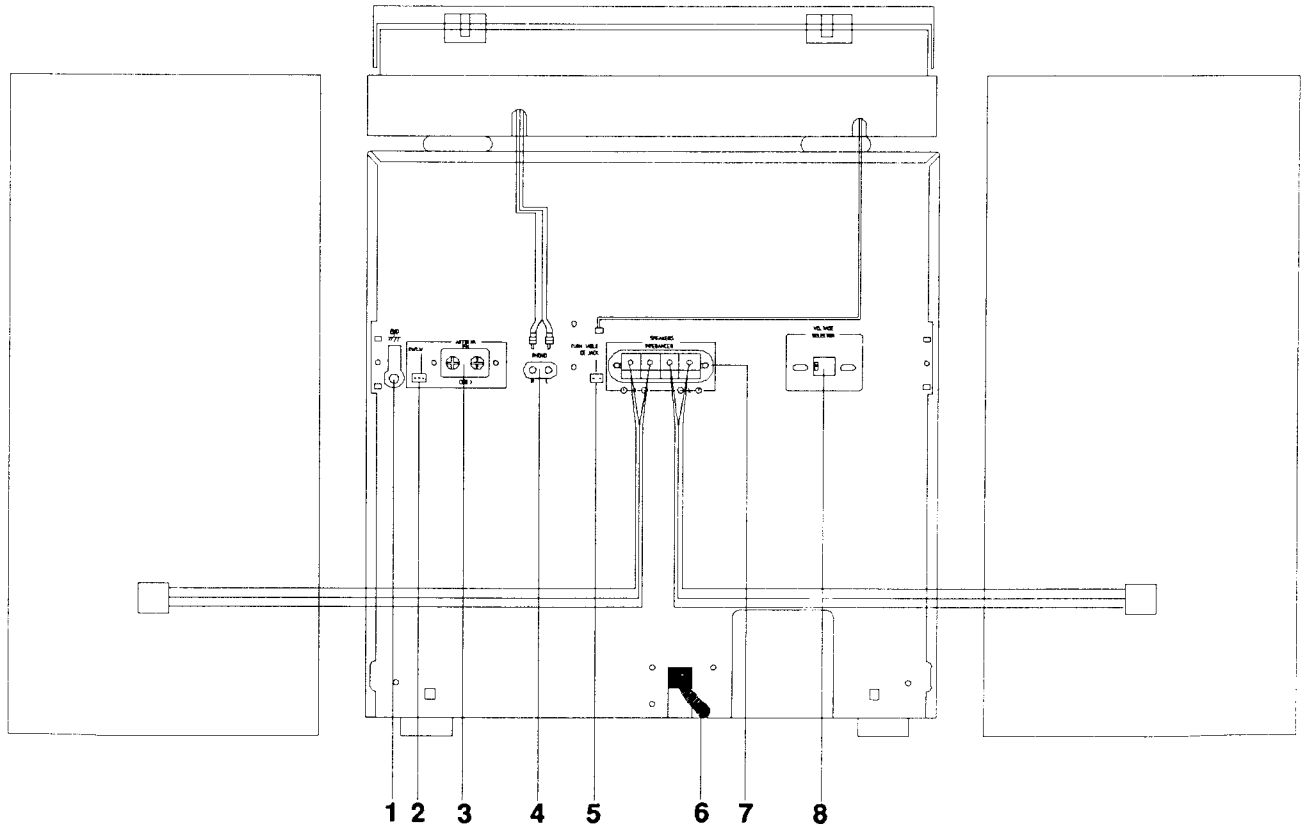
(1) Turn the power on by pressing the POWER button.
(2) Press the CLOCK button, then the current time will be indicated.
(3) Hold the CLOCK button and at the same time press MEMORY button twice.
The display should now be flashing.
(4) Using the TUNING DOWN/UP buttons, enter the current time of day.
(5) Press the MEMORY button, then the current time correction will be completed.
The display will now stop flashing and maintain current time.

* How to set the timer operating time.

The TIMER function can be used to switch on the system automatically at a pre-set time.
These functions are operated only by remote control.

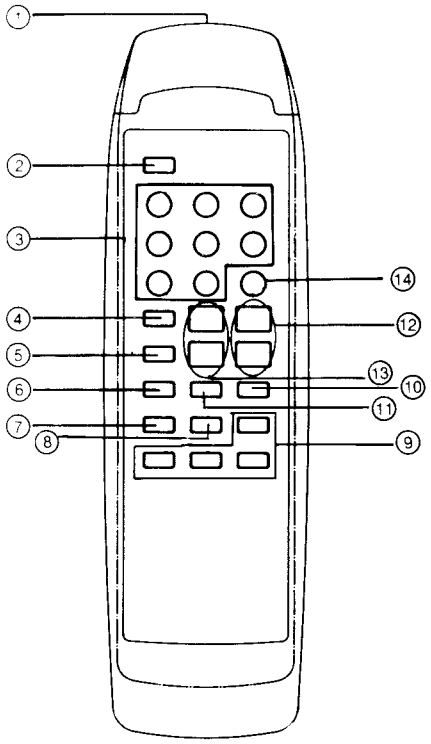
(1) Press the CLOCK button once -the current time will be displayed.
(2) Press the CLCOK button again with the MEMORY button on.
(3) Release both buttons.
(4) Press the MEMORY button once again.
The display will now commence to flash on and off and TIMER will be displayed.
(5) Using the TUNING DOWN/UP button sets the time that you desire.
(6) Press the MEMORY button twice and the display will revert to the current time of day.
(7) Select the function which you wish to commence at the programmed time-TUNER, TAPE.
(8) Finally switch the system off with the POWER button.
The system is then in the stand-by mode and will automatically switch on at the programmed time.
Be sure to check if TIMER on the DISPLAY is turned on.
(9) Once programmed, the timer action may be selected as required by pressing the TIMER ON/AUTO/MANUAL button.
One press to switch on, a further press to switch off.
The display will indicate TIMER when the system is in the TIMER mode.

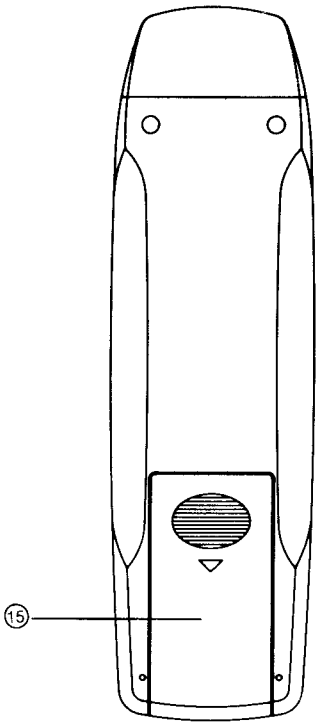
2. REAR



1. TURNTABLE GROUND JACK
2. AM ANTENNA JACK
3. FM ANTENNA TERMINAL
4. PHONO INPUT JACK
5. TURN TABLE DC JACK
6. POWER CORD
7. SPEAKER TERMINAL
8. VOLTAGE SELECTOR (OPTIONAL)

3. REMOTE CONTROL





1. INFRARED TRANSMITTER WINDOW
2. POWER ON/OFF BUTTON
3. PRESET STATION BUTTONS
4. MEMORY BUTTON
5. AUTO TUNING BUTTON
6. BAND BUTTON
7. TUNER BUTTON
8. CD BUTTON
9. CD CONTROL BUTTON
   * PLAY/PAUSE BUTTON: Press to play and press again for pause.
   * STOP BUTTON: Press to stop playing. The laser pick up will go back to the beginning of the disc.
   * BACK/REW BUTTON: Press quickly (less than 1 second) for Skip (BACK). Hold pressed for Search (REW).
   * NEXT/FF BUTTON: Press quickly (less than 1 second) for Skip (NEXT). Hold pressed for Search (F.F)
10. SLEEP BUTTON
11. P/S (PRESET SCAN) BUTTON: Press to automatically scan each of the programmed station.
12. VOLUME UP/DOWN BUTTONS
13. TUNING UP/DOWN BUTTONS
14. CLOCK BUTTON
15. BATTERY COVER

The Remote Control uses 'AA' size batteries which should be inserted with the terminal facing in the direction indicated by the diagram in the battery compartment.

■ DISASSEMBLY INSTRUCTION

1. CD DOOR GUIDE & CASSETTE DOOR

1) Press OPEN/CLOSE button.
2) Remove CD DOOR GUIDE. (direction A)
   [How to remove DISC TRAY] ➜ See FIG. 5
   ⓐ POWER ON : Release 1 screw (②) and pull out (direction A)
   ⓑ POWER FAILURE : Release 1 screw (②). Lift TRAY COVER up (↖) and pull out. (direction A).
3) Press STOP/EJECT button.
4) Press hook (① : direction c) and remove CASSETTE DOOR (direction B).

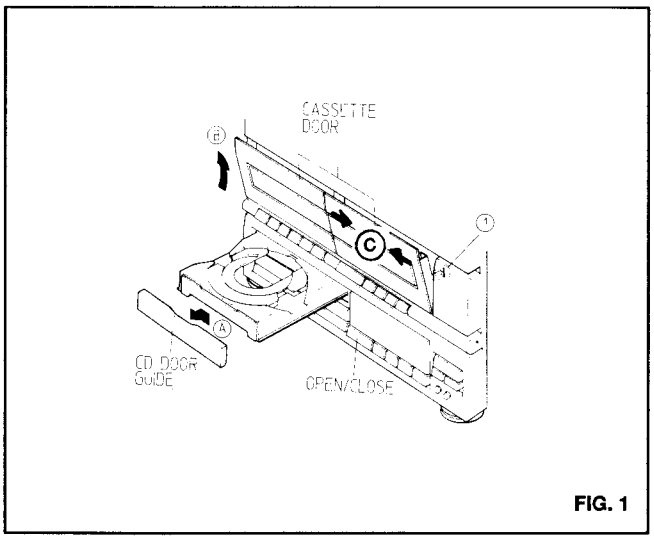


FIG. 1

* Be sure to unplug the power cord before disassembling the unit.

2. TOP & REAR CABINET

1) Release 10 screws (①).
2) Remove TOP CABINET. (direction A)
3) Release 10 screws (②).
4) Remove REAR CABINET. (direction B)

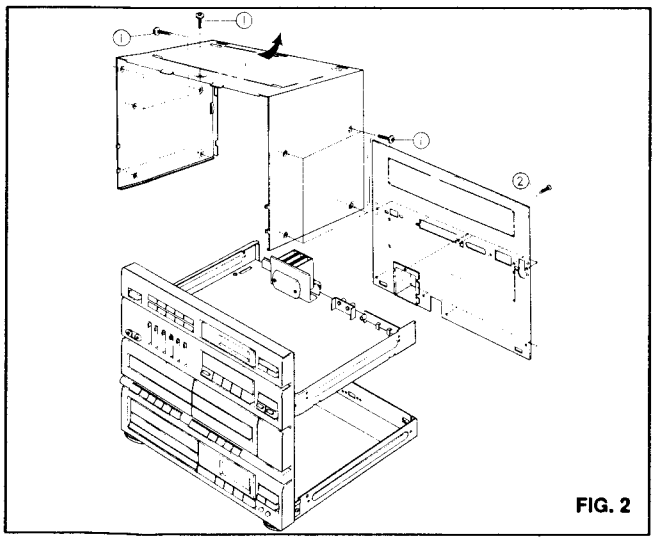


FIG. 2

3. MAIN PCB & FRONT PCB

1) Release 4 screws (①).
2) Remove MAIN PCB.
3) Release screws (②).
4) Remove FRONT PCB.

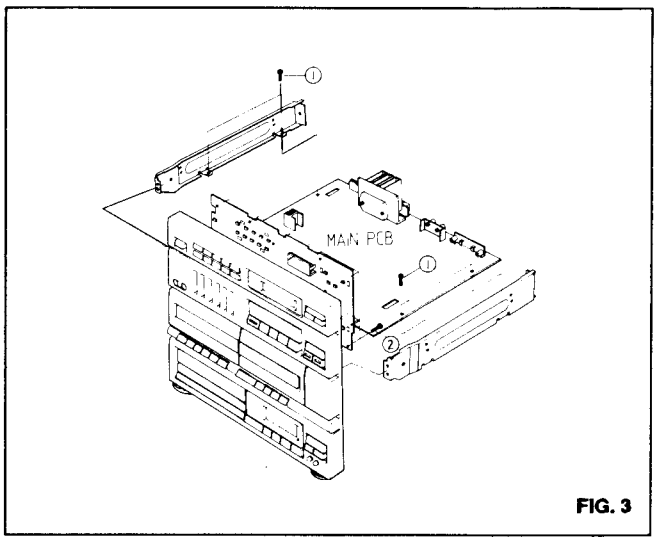


FIG. 3

4. CASSETTE DECK

1) Release 8 screws (①).
2) Remove CASSETTE DECK ASSEMBLY.

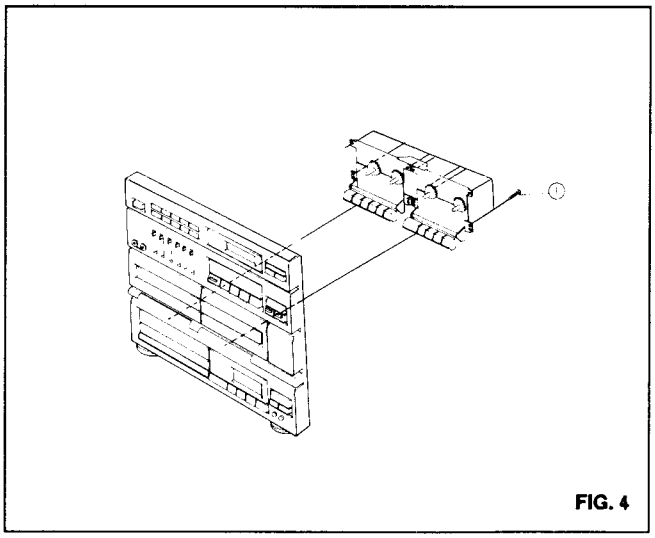


FIG. 4

5. CD DECK

1) Release 4 screws (①).
2) Remove CD DECK ASSEMBLY.

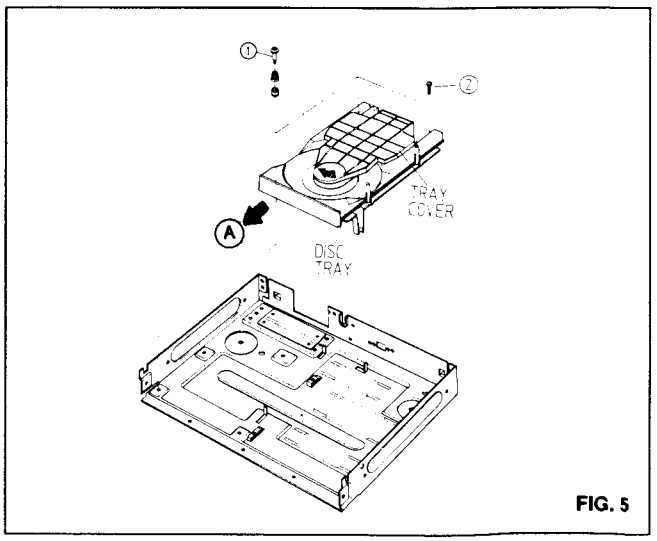


FIG. 5

■ BASIC CIRCUIT OPERATION

1. TUNER

- LC7230-8347 (μ-COM) : UIC1

* I : INPUT, O : OUTPUT

PIN No.	PIN NAME	I/O	OPERATION	ACTIVE
1	XIN	I	Crystal oscillating port. (4.5MHz)	—
80	XOUT	O	Crystal oscillating port. (4.5MHz)	—
2, 79	TEST1, 2	I	Connect to GND	—
3	REMOCON	I	Remote control input port. If it is open, it may cause Remote Control to maloperate.	L
4	$\overline{\text{STEREO}}$	I	Not in use.	L
7	CE2	O	Not in use.	L
8 – 11	$\overline{\text{FM}}$, $\overline{\text{MW}}$, $\overline{\text{LW}}$, $\overline{\text{SW}}$	O	Band power convert port. CD Remote control signal port.	L
12	VR UP	O	If volume up signals are input, it outputs high voltage.	H
13	VR DOWN	O	If volume down signals are input, it outputs high voltage.	H
14	MO/ST	O	Mono stereo selection port.	H
15 ~17	CE, DO, CLK	O	LC7821 control port. (serial data line)	H, H, ⌐
18	IF CNT	O	IF signal output port. If low voltage is input to SD port (LA1851N) during auto search, it changes from low to high.	H
19	NARROW	O	CD remote control signal port.	H
20	POWER OUT	O	Power control port.	H
21	$\overline{\text{A MUTE}}$	O	Audio mute port.	L
22	STB	O	Not in use	H
23 – 26	T7 – T4	O	Key scan output signal	H
27 – 30	T3 – T0	O	Key scan output signal.	H
32 – 35	K3 – K0	I	Key input signal.	H
5 – 6	K5, K4	I	Diode matrix input signal.	H
63 – 36	S1 – S28	O	LCD Segment drive port.	—
65, 64	COM1, 2	O	LCD Common drive port.	—
67	$\overline{\text{HOLD}}$	I	L—Back up mode.	L
69	$\overline{\text{SD}}$	I	Broadcast receiving port.	L
70	HCTR	I	FM IF Signal input port.	—
71	LCTR	I	AM IF Signal input port.	—
72	SNS	I	Transmit data to LC7821	H
74, 75	FM IN, AM IN	I	Input local OSC signal.	—
77, 78	EQ1, 2	O	Phase comparison output signal. (pin77 : AM, 78 : FM)	
66	INT	I	Remote control input port.	
31, 73	VDD			
76	Vss			
68	RES			

2. TAPE

1) PLAY

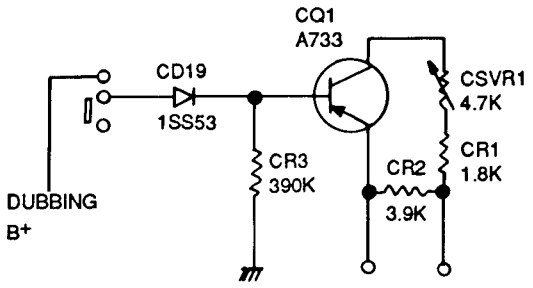
When PLAY button of deck A is pressed, leaf switch is on which drives the motor through the CD1.
Deck A is operational when the pin 19 of JIC1 (TA 8189) is at 0V.
When the PLAY button of deck B is pressed, the Leaf switch of deck B is on, which drives the motor through the CD2.
Deck B is operational when 11 ~ 12 voltage is applied to pin 19 of IC TA 8189.
If you press both PLAY button of deck A and B simultaneously, deck B operates, first.

2) RECORD

If RECORD button of deck A is pressed, voltage is applied to the tape oscillation coil (LT1), which generates the bias supply current (85KHz) and, the current is supplied through the LC5 and LC6 to R/P head.
At this time, the current is combined with the current of the Record Amplifier Output incorporated in the JIC1 (TA 8189 pin 9, 16) then supplied to the R/P HEAD which records signals.
At this moment, PLAY Equalizer of deck A, B is set to deck B (pin1, 24 of JIC1).

3) MOTOR SPEED

In normal speed, the speed is determined by the value which CR2 is combined with CSVR1 + CR1 (Q1 base : high)
Therefore, the motor speed is in proportion to the resistor value. High speed dubbing operates only when recording in deck A and playing in deck B.
When CSW1 is on, B+ voltage which will turn CQ1 off is supplied to base of CQ1. Then motor rotates at high speed.
High rotational speed is determined by voltage at CQ1.



3. CD

1) KS5990/KS59910 (Digital Signal Processor) : IC401

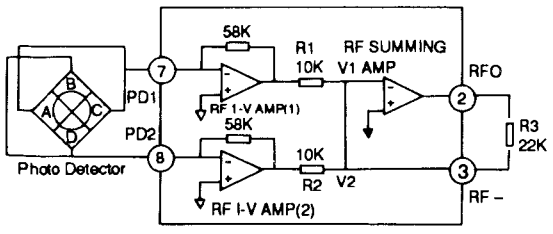
* I/O : INPUT/OUTPUT

Pin No.	Symbol	I/O	Description
1	SMEF	O	Pin 1 output is switched constant when output filter of the spindle motor is energized.
2	SMON	O	ON/OFF control for spindle motor.
3	SMPD	O	Spindle motor drive. Provides rough control during CLV-S mode and phase control during CLV-P mode.
4	SMSD	O	Spindle motor drive. Controls speed during CLV-P mode.
5	EFMZ	I	EFM signal from RF amplifier.
6	EFMO	O	Controls slice level of the EFM signal.
7	LOCK	O	The output of pin 7 reflects the status of the GFS signal which is sampled at PBFR/16. When the GFS signals is "H", but, when the signal has remained "L" for at least 8 samples, the output of pin 7 is "L".
8	VCOO	O	VCO output. The frequency is f = 8.6436MHz, when locked by the DBFR signal.
9	VCOI	I	VCO input.
10	TEST	I	(0V).
11	PHAS	O	The output of Pin11 provides phase comparison of EFM signal and VCO/2.
12	Vss	—	GND (0V).
13	MCK	I	Pin 13 provides serial transmission clock from the CPU. Data is latched on the leading edge of the clock.
14	MLT	I	Pin 14 provides latch input from the CPU. 8-bit shift register data (serial data received from the CPU) is latched in each of the registers.
15	MDAT	I	Serial data from the CPU.
16	XRST	I	System reset ("L").
17	TRCK	I	Tracking pulse input.
18	ISTAT	O	Output reflecting internal condition as designated by address.
19	MUTE	I	Muting input. MUTE is "L" when ATTM of internal register A is "L" (normal condition). MUTE is "H" when meting condition is set.
20	SQOK	O	Output the results CRC check of subcode Q.
21	SBCK	I	Clock input for subcode serial output.
22	SDAT	O	Serial output of subcode.
23	SQDT	O	Output of subcode Q.
24	S0S1	O	Output of subcode sync S0 + S1.
25	SQCK	I/O	Clock for reading subcode Q.
26	SQEN	I	Input for selecting SQCK (L; SQCK is output, H; SQCK is input)

Pin No.	Symbol	I/O	Description
27	SRAM	I	SRAM is "H" in Normal, SRAM is "L" when system is testing.
28	LKFS	O	Display output for frame sync lock status.
29	DB8	I/O	Data pin for external RAM. DATA8 (MSB) in test mode. Hi-Z in normal
30	DB7	I/O	Data pin for external RAM. DATA7 in test mode. Hi-Z in normal
31	DB6	I/O	Data pin for external RAM. DATA6 in test mode. Hi-Z in normal
32	DB5	I/O	Data pin for external RAM. DATA5 in test mode. Hi-Z in normal
33	V_{DD}	—	Power supply (+ 5V).
34	DB4	I/O	Data pin for external RAM. DATA4 in test mode. Hi-Z in normal
35	DB3	I/O	Data pin for external RAM. DATA3 in test mode. Hi-Z in normal
36	DB2	I/O	Data pin for external RAM. DATA2 in test mode. Hi-Z in normal
37	DB1	I/O	Data pin for external RAM. DATA1 (LSB) in test mode. Hi-Z in normal
38	AD01	O	(LSB) In normal mode (TEST = 'L', SRAM = 'H'), these pins are High impedance (Hi-Z) In test mode (TEST = 'H', SRAM = 'L'), these pins are Output address of external RAM
39	AD02	O	
40	AD03	O	
41	AD04	O	
42	AD05	O	
43	AD06	O	
44	AD07	O	
45	AD08	O	
46	AD09	O	
47	AD10	O	
48	AD11	O	(MSB)
49	WE	I/O	In normal mode, this is WE output. In test mode, write enable input.
50	CE	I/O	In normal mode, this is CE output. In test mode, chip enable input.
51	4MCK	O	Divider output for crystal. f = 4.2336MHz
52	Vss	—	GND (0V)
53	XIN	I	Input to crystal oscillator circuit. Depending on the mode the frequency is either f = 8.4672 or 16.9344MHz.
54	XOUT	O	Output from crystal oscillator circuit. Depending on the mode the frequency is either f = 8.4672 or 16.9344MHz.
55	SEL1	I	Mode selection input 1.
56	SEL2	I	Mode selection input 2.
57	SEL3	I	Mode selection input 3.
58	SEL4	I	Mode selection input 4. Code switch input for audio data output. 2's complement output when "L", offset binary output when "H".
59	SEL5	I	Mode selection input 5. Code switch input for audio data output. Serial output when "L", parallel output when "H".
60	APTR	O	Output for aperture compensation. "H" when R-ch.
61	APTL	O	Output for aperture compensation. "H" when L-ch.
62	C1F1	O	Monitor output reporting status of error correction for C1 decoder. When SEL5 = 'L', DA01 (LSB of parallel audio data) is output when SEL5 = 'H'.
63	C1F2	O	Monitor output reporting status of error correction for C1 decoder when SEL5 = 'L', DA02 is output when SEL5 = 'H'.

Pin No.	Symbol	I/O	Description
64	C2F1	O	Monitor output reporting status of error correction for C2 decoder when SEL5 = 'L', DA03 is output when SEL5 = 'H'.
65	C2F2	O	Monitor output reporting status of error correction for C2 decoder when SEL5 = 'L', DA04 is output when SEL5 = 'H'.
66	C2FL	O	When SEL5 = 'L', output of status condition. C2FL is set 'H' when the C2 sequence. Presently being corrected becomes impossible to correct. DA05 is output when SEL5 = 'H'.
67	C2PO	O	Display output of the C2 pointer when SEL5 = 'L', DA06 is output when SEL5 = 'H'.
68	XTFR	O	When SEL5 = 'L', output of read frame dock which is 7.35KHz of the crystal system. DA07 is output when SEL5 = 'H'.
69	PBFR	O	When SEL5 = 'L', output of write frame clock which is 7.35KHz when locked by the crystal system. DA08 is output when SEL5 = 'H'.
70	$\overline{\text{PBCK}}$	O	When SEL5 = 'L', output of VCO/2 (f = 4.3218MHz when locked by the EFM signal). DA09 is output when SEL5 = 'H'.
71	FSDW	O	When SEL5 = 'L', output for unprotected frame sync patterns. DA10 is output when SEL5 = 'H'.
72	ULKFS	O	Output for display of status of frame sync protection when SEL5 = 'L', DA11 is output when SEL5 = 'H'.
73	V_{DD}	—	Power supply (+ 5V).
74	$\overline{\text{JIT}}$	O	When SEL5 = 'L', output for display of either RAM overflow or underflow for +4 frame jitter absorption. DA12 is output when SEL5 = 'H'.
75	ZWDCK	O	When SEL5= 'L', output for strobe signal (352.8KHz when DF is ON, 176.4KHz when DF is OFF). DA13 is output when SEL5 = 'H'.
76	$\overline{\text{BLCK}}$	O	When SEL5 = 'L', inverse output of BLCK. DA14 is output when SEL5 = 'H'.
77	BLCK	O	When SEL5 = 'L', bit clock output (4.2336MHz when DF is ON, 2.1168MHz when DF is OFF) DA15 is output when SEL5 = 'H'.
78	DATA	O	Serial data output of audio signal when SEL5 = 'L'. DA16 is output when SEL5 = 'H'.
79	WDCK	O	Strobe signal output. Output is 176.4KHz when DF is on. Output is 88.2KHz when DF is off.
80	CHCK	O	Strobe signal output. Output is 88.2KHz when DF is on. Output is 44.1KHz when DF is off.

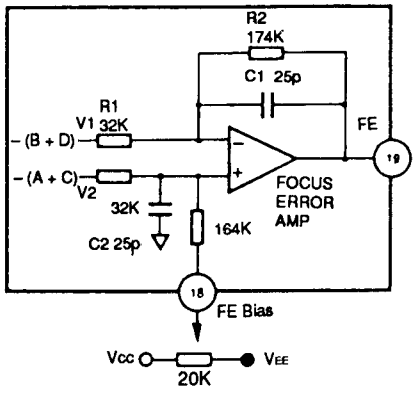
(2) RF AMPLIFIER (KA9201) : IC301



RF I-V AMP(1) and RF I-V AMP(2) are converted into voltage from current signal of PD1 (A + C) and PD2 (B + D) through the 58Kohm internal resistor. Furthermore, it is added in RF summing amplifier, this signal (A + B + C + D) is output at RFO (pin 2). The RF output voltage (low frequency) is as follow.

VRF = – R3* (iPD1 + iPD2)
= – R3* (V1/R1 + V2/R2)
= – 22K* (V1/10K + V2/10K)
= – 2.2* (V1 + V2)

(3) FOCUS ERROR AMPLIFIER (KA9201) : IC301



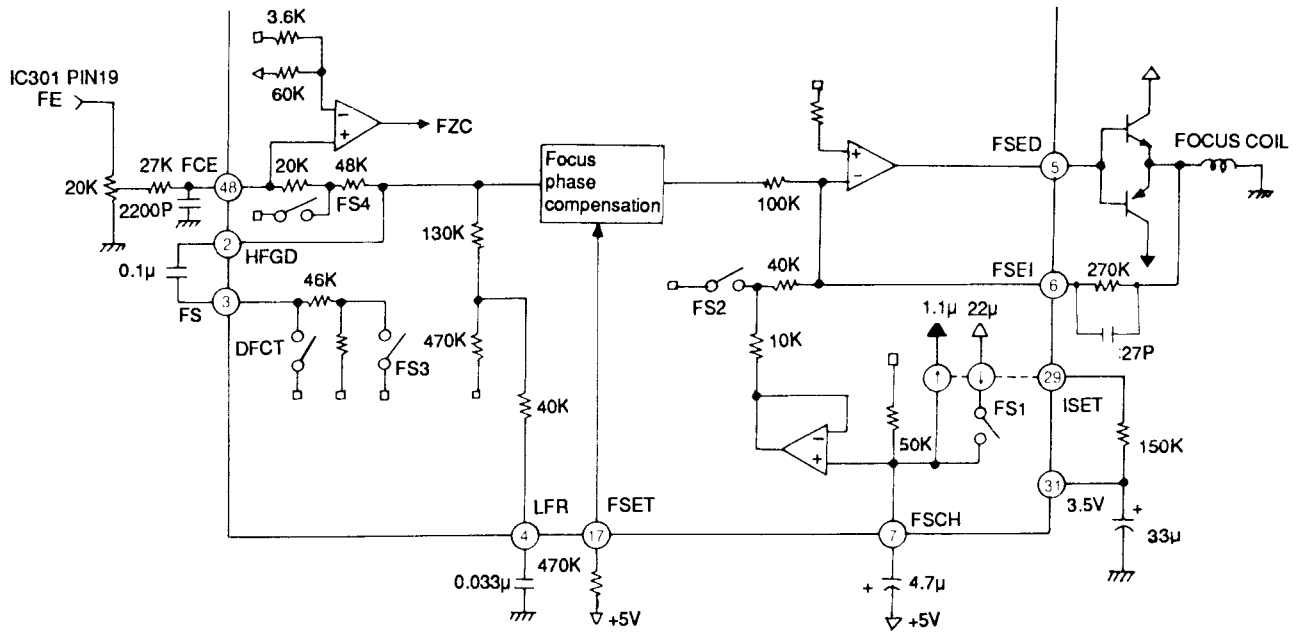
The Focus Error AMP is the difference between RF I-V AMP (1) output (A + C) and RF I-V AMP(2) output (B + D). This two [– (A + C), –(B + D)] signals are each applied to the (–) and (+) input of Focus Error AMP.
As the result of differential voltage, Focus Error signal is appeared at FE pin (pin 19).
This FE output voltage (low frequency) become [(A + C) – (B + D)], as follow.

V_{FE} = R2/R1 x (V2–V1)
= 5.4 (V2 – V1)

The focus error voltage is directed to the focus servo circuit, to maintain optimum focusing at all times.

(4) FOCUS SERVO SYSTEM (KA830) : IC201

The below is a block diagram of the focus servo system.
When FS3 is switched on, the high frequency gain can be reduced by forming a low frequency time constant through a capacitor connected across pins 2 and 3 and the internal resistor.
The capacitor across the pin 4 and GND has a time constant to raise the low frequency usually playback condition.
The peak frequency of the focus phase compensation is inversely proportional to the resistor connected to pin 17 (about 1. 2KHz when the resistor is 470 k Ω).



The focus search peak becomes about ± 1.1 Vp-p with above constant. The peak is inversely proportional to the resistor connected across the pins 29 and 31. However, when this resistor is varied, the peaks of track jump and sled kick also vary.
The FZC comparator invert input is set to 5.7% of the difference between the reference voltage Vcc and Vc (Pin 1) : 5.7% x (Vcc – Vc).

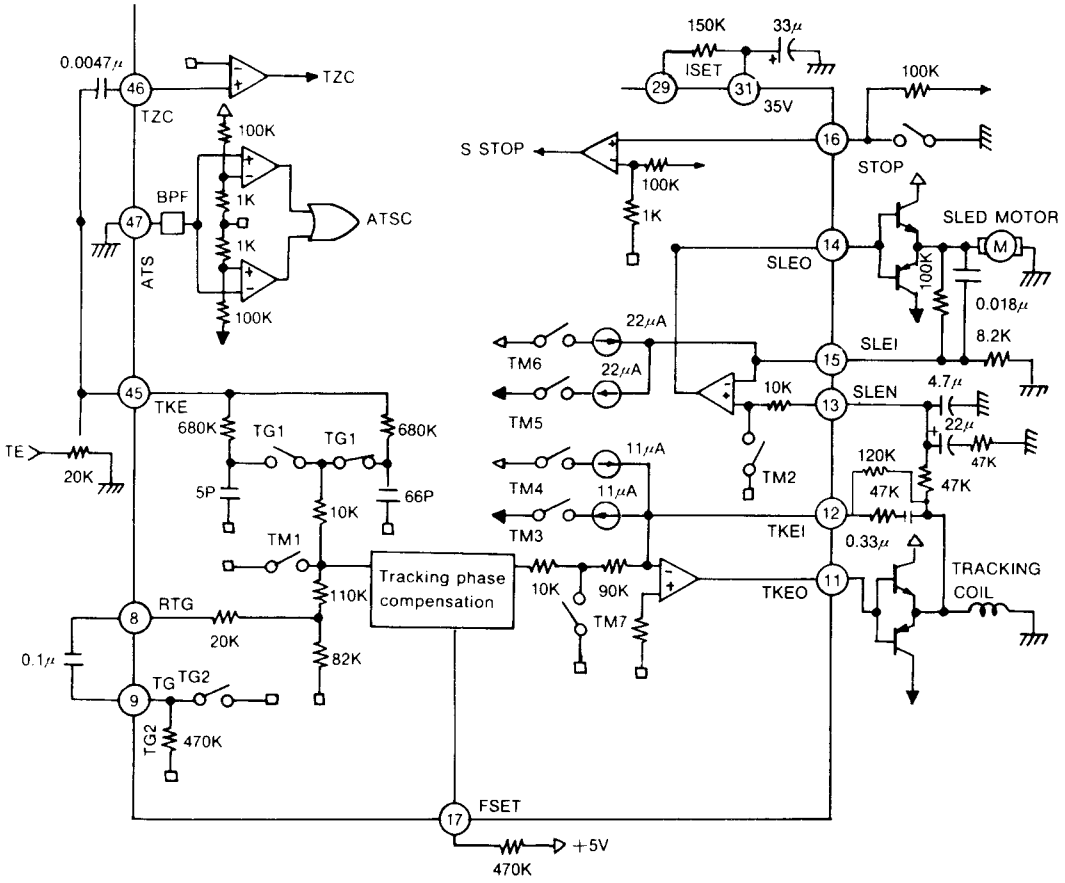
(5) TRACKING SLED SERVO SYSTEM (KA830) : IC201

The below is a block diagram of the tracking sled servo system.

The capacitor across pins 8 and 9 has a time constant to lower the high frequency when TG2 is switched off. The tracking phase compensation peak frequency is inversely proportional to the resistor connected to pin 17 (about 1.2KHz when the resistor is 470KΩ).

For a tracking jump in the FWD or REV direction, TM3 or TM4 are set to ON. At this time, the peak voltage fed to the tracking coil is determined by the TM3 and TM4 current values and the feedback resistor from pin 12. That is:

Track jump peak voltage = TM3 (TM4) current value x feedback resistor value



The FWD or REV sled kick is done by setting TM5 or TM6 ON. At this time, the peak voltage added to the sled motor is determined by the TM5 or TM6 current value and the feedback resistor from pin 15.

Sled jump peak voltage = TM5 (TM6) current value x feedback resistor value

Each SW current value is determined by the resistor connected to pins 29 and 31.

When the resistor is at about 150KΩ ,

TM3 or TM4 is + 11 μA and TM5 or TM6 is + 22 μA.

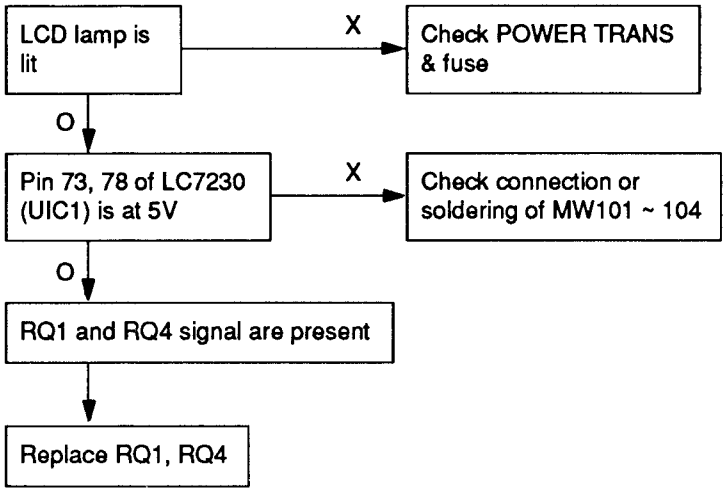
This current value is almost inversely proportional to the resistor, variable within a range of about 5 to 40 μA for TM3.

STOP is the ON/OFF detection signal for the limit SW or the sled motor's innermost circumference.

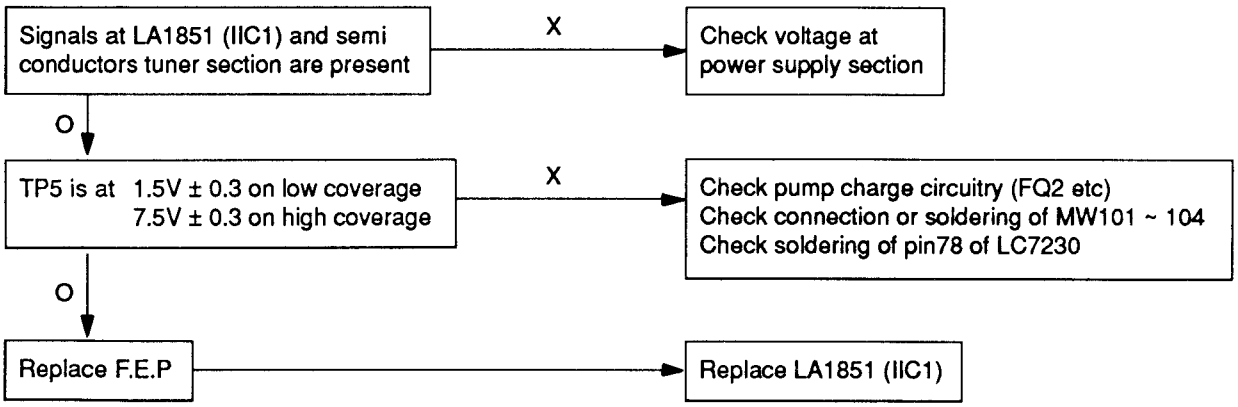
■ TROUBLE SHOOTING

1. MAIN

1) POWER ON/OFF PROBLEM

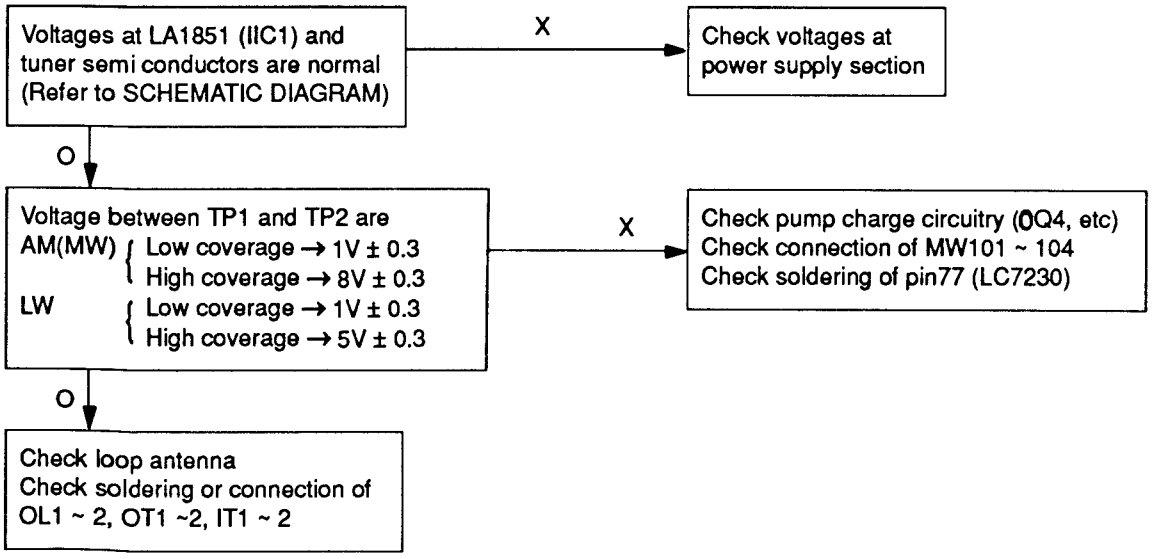


2) FM NO SOUND

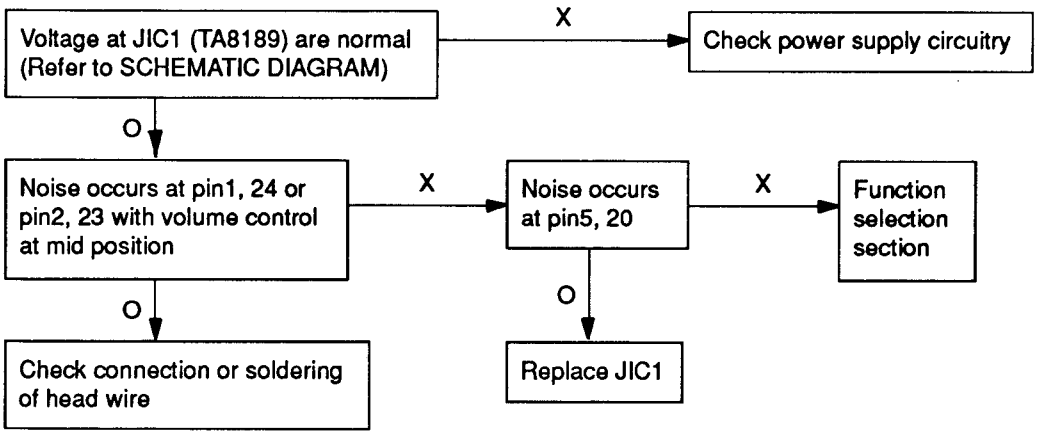


* F.E.P : FRONT END PACK

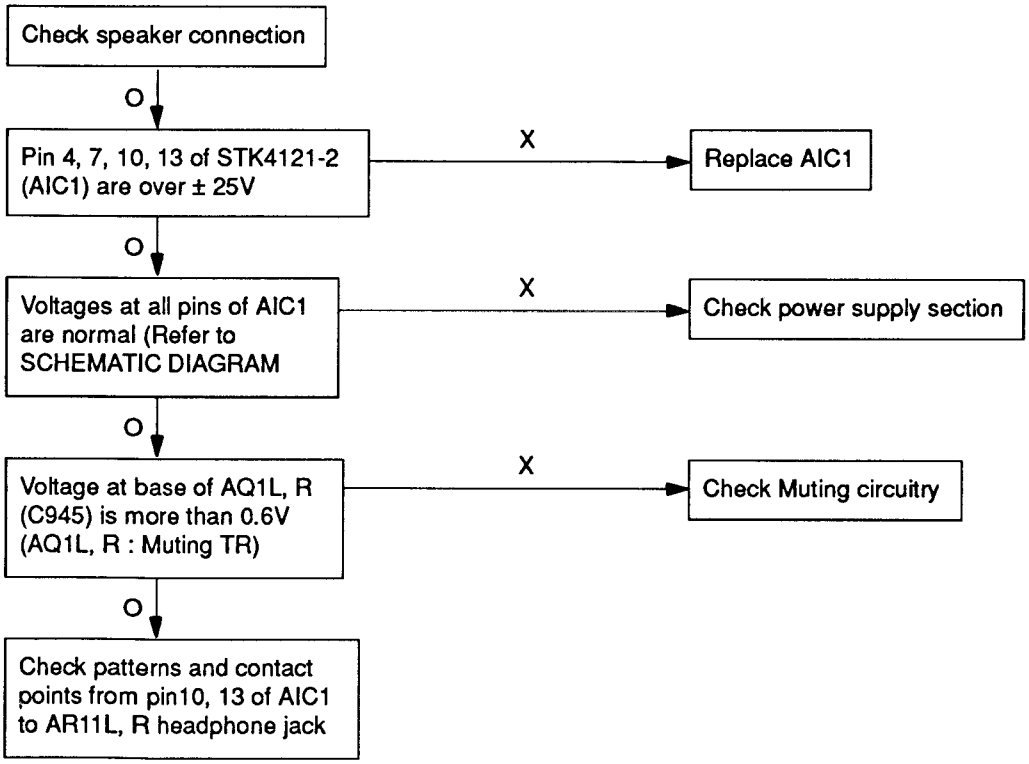
3) AM NO SOUND



4) TAPE NOT PLAYING



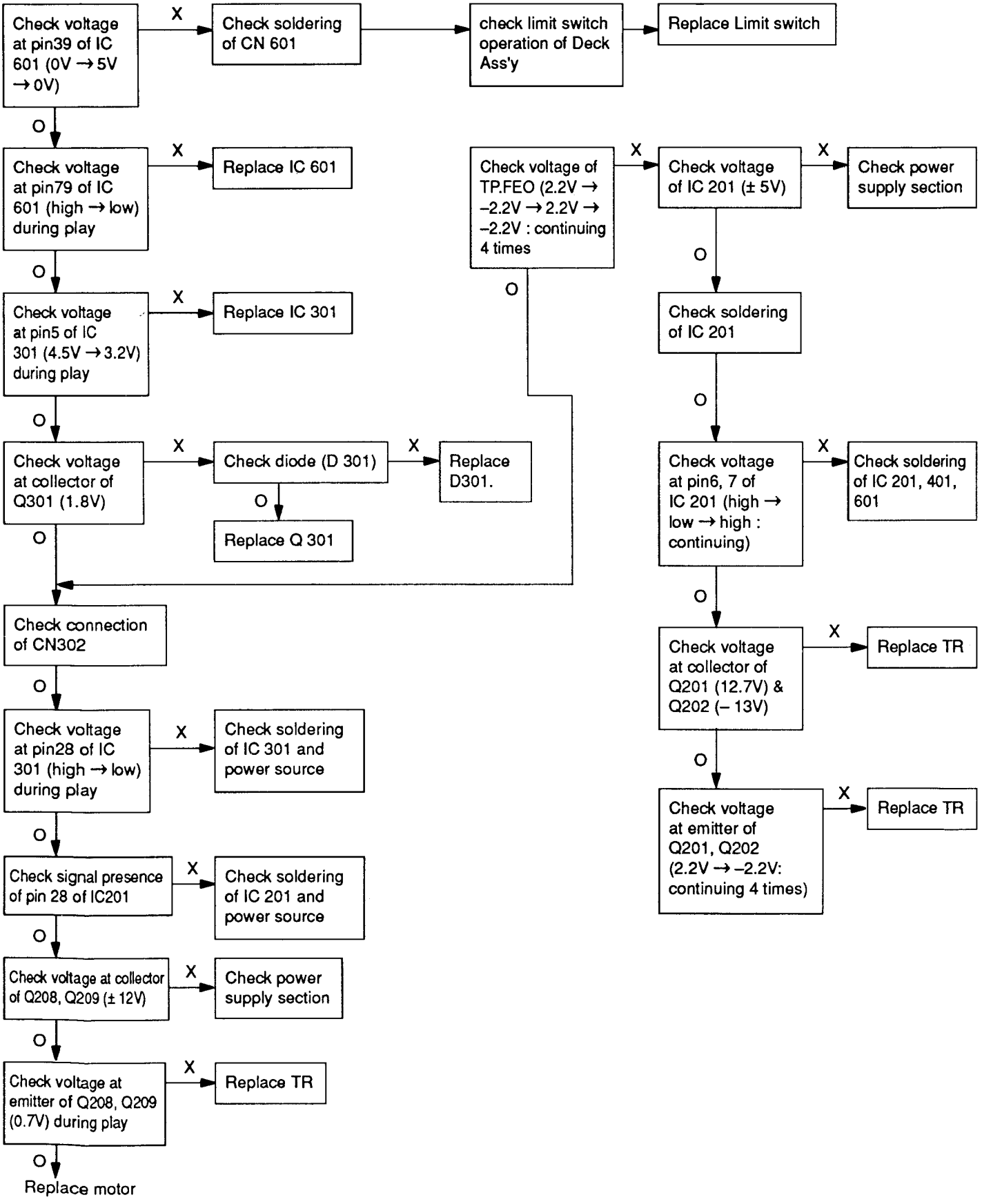
5) AUDIO OUTPUT PROBLEM



2. CD

* Be sure not to use a warped or dirt-build up disc in troubleshooting.

1) DISC DOESN'T ROTATE



2) LEAD IN NOT WORKING

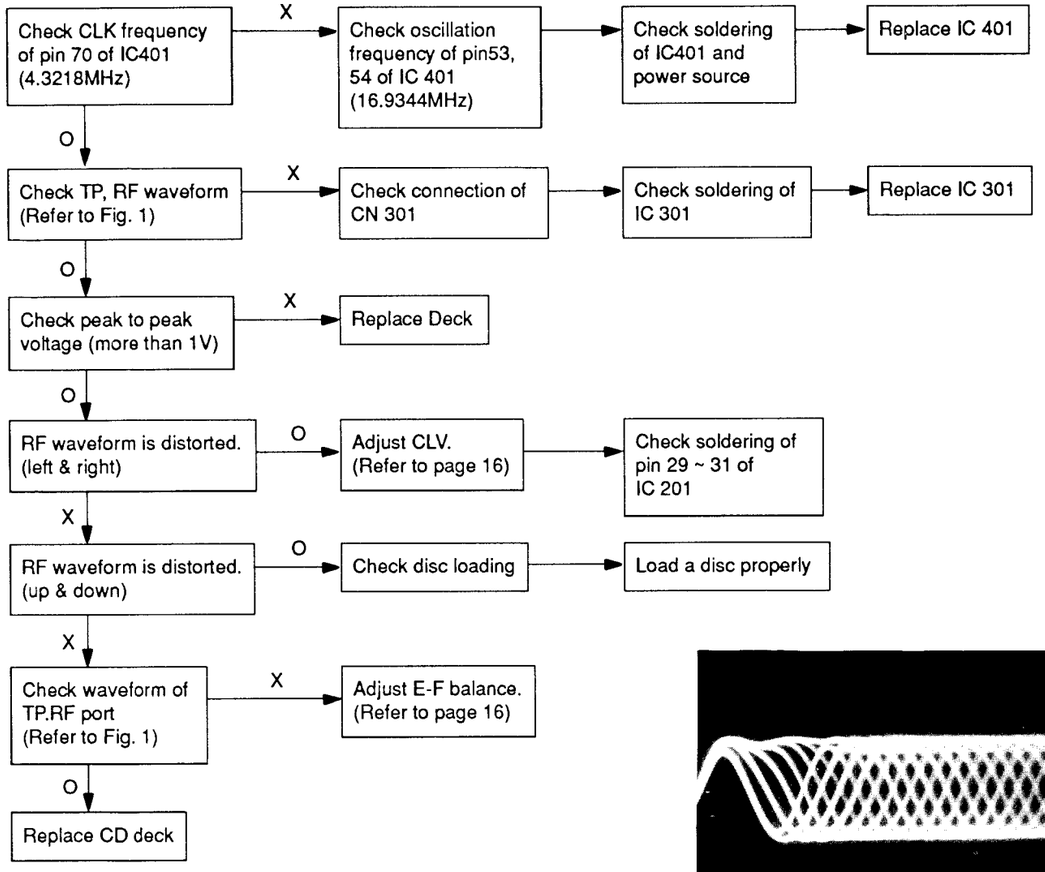
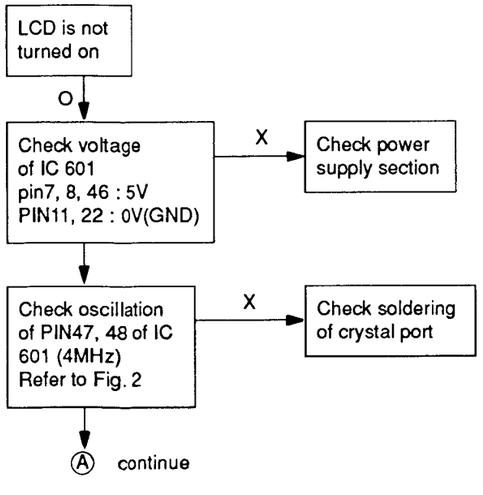


FIG. 1

3) DISPLAY NOT WORKING



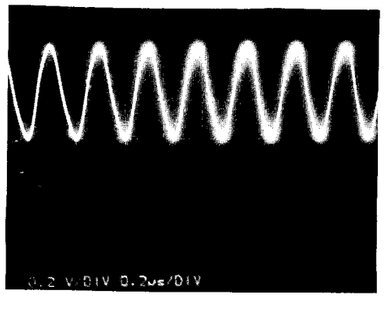


FIG. 2

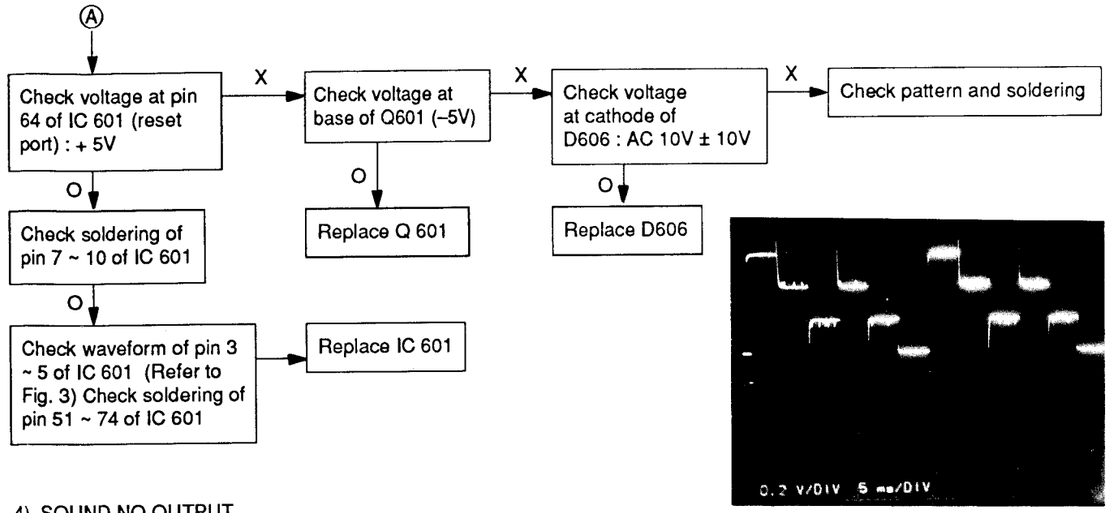
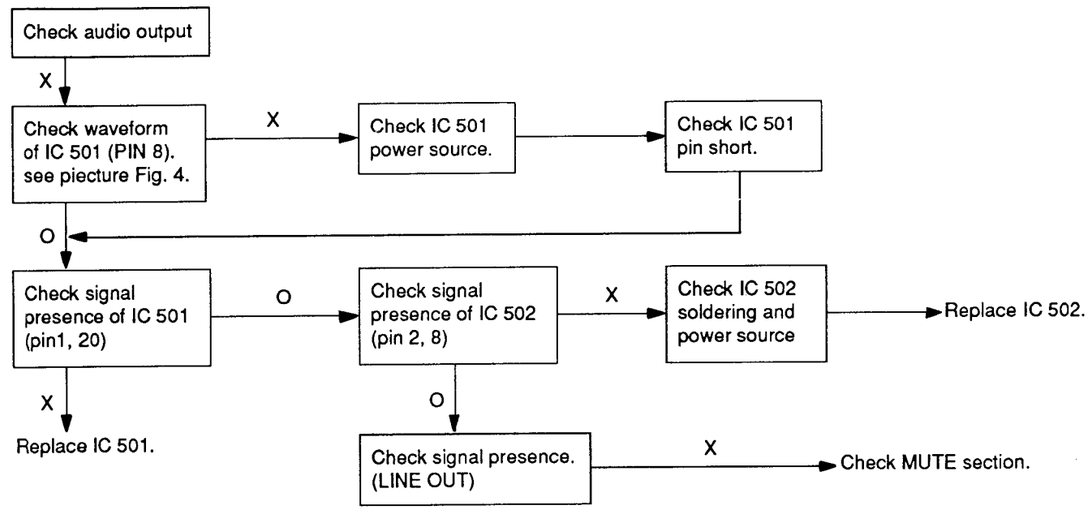


FIG. 3

4) SOUND NO OUTPUT



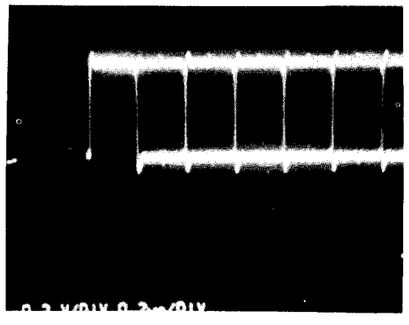


FIG. 4

■ ADJUSTMENT

Adjustments to this unit have already been made during production procedure.
Therefore, no adjustment is needed. If parts related to the adjustment are replaced, or readjustment is required, proceed with adjustments in the order given below.

1. TUNER

1) MEASURING INSTRUMENTS REQUIRED

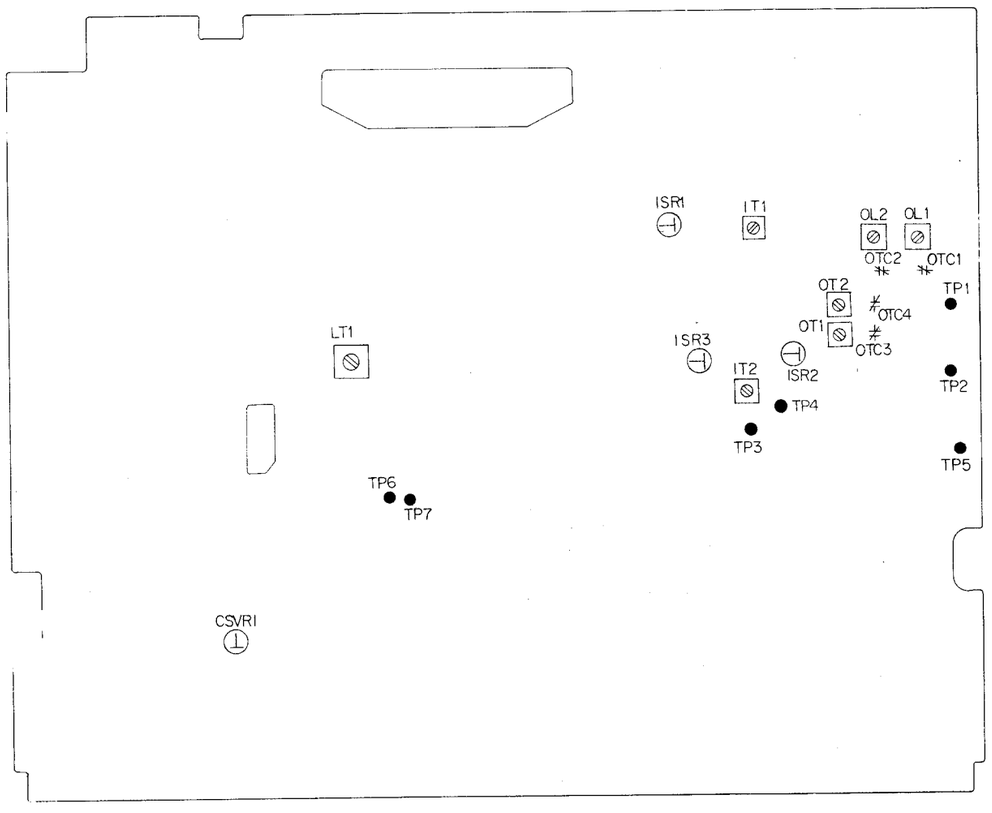
(1) AM standard signal generator (S.S.G)
: 400Hz, 30% MOD.
(2) FM standard signal generator
: output impedance 75 Ω , (or 300 Ω dummy), 1KHz, 40KHz DEV.
(3) OSCILLOSCOPE (4) VTVM
(4) VTVM (5) Frequency counter
(6) Loop antenna
(7) Dummy load (8 Ω)
(8) DC voltmeter

2) IMPORTANTS

(1) Check the power source voltage.
(2) Set function and band switches to a band to be aligned.
(3) The equalizer, volume and balance control should be turned to the mid position.

3) LOCATION OF ADJUSTMENT POINTS (PARTS SIDE)

MAIN PCB



4) ADJUSTMENT PROCEDURE

(1) FM ADJUSTMENT

STEP	ITEM	CONNECTION	SSG FREQ.	FREQ. SETTING	ADJUSTMENT POINT	RESULT & REMARK
1	IF CENTER & T.H.D adjustment	FIG. 1	98MHz	98.7MHz	IT1	Distortion minimum
2	Auto search level adjustment	FIG. 2	98MHz	98MHz	ISR2	0V
3	FM stereo separation adjustment	FIG. 3	98MHz	98MHz	ISR1	If L-CH is input, R-CH should be minimum and visa-versa.

* **High coverage and tracking adjustment are not required.**

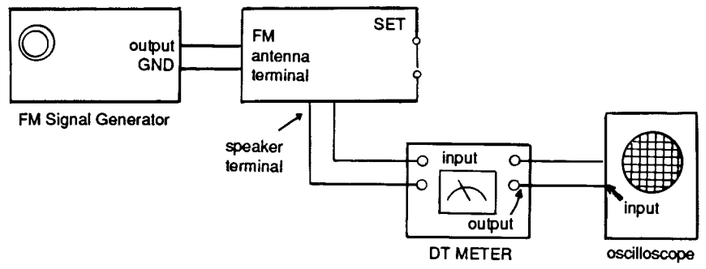


FIG.1) IF CENTER AND T.H.D

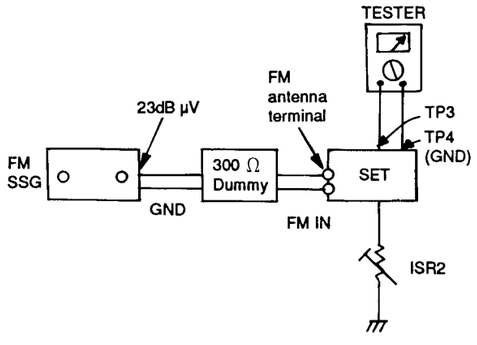


FIG. 2) AUTO SEARCH LEVEL

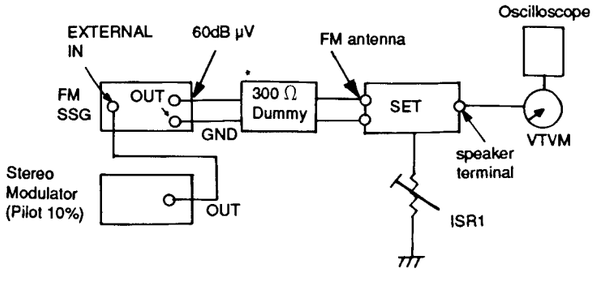


FIG. 3) FM STEREO SEPARATION

* FIG. 2, 3 : 300 Ω dummy-optional

(2) AM ADJUSTMENT

① 2 BAND (FM/AM)

STEP	ITEM	CONNECTION	SSG FREQ.	FREQ. SETTING	ADJUSTMENT POINT	RESULT & REMARK
1	Intermidiate frequency (IF) adjustment	FIG. 4	522KHz	522KHz	IT2	Maximum output
2	AM frequency coverage adjustment	Connect DC voltmeter to TP1 and GND (TP2).	—	522KHz	OT1	1V
3			—	1611KHz	OTC3	8V
4	Repeat step 2 and 3 several times.					
5	AM tracking adjustment	FIG. 4	594KHz	594KHz	OL1	Maximum output
6			1404KHz	1404KHz	OTC1	Maximum output
7	Repeat step 5 and 6 several times.					
8	AM auto search level adjustment	FIG. 5	999KHz	999KHz	ISR3	0V

② 3 BAND (FM/MW/LW) * MW band : Refer to 2 band section. (MW → AM)

STEP	ITEM	CONNECTION	SSG FREQ.	FREQ. SETTING	ADJUSTMENT POINT	RESULT & REMARK
1	LW frequency coverage adjustment	FIG. 4		146KHz	OT2	1V
2				290KHz	OTC4	5V
3	Repeat step 1 and 2.					
4	LW tracking adjustment	FIG. 4	160KHz	160KHz	OL2	Maximum output
5			270KHz	270KHz	OTC2	Maximum output
6	Repeat step 4 and 5 several times.					

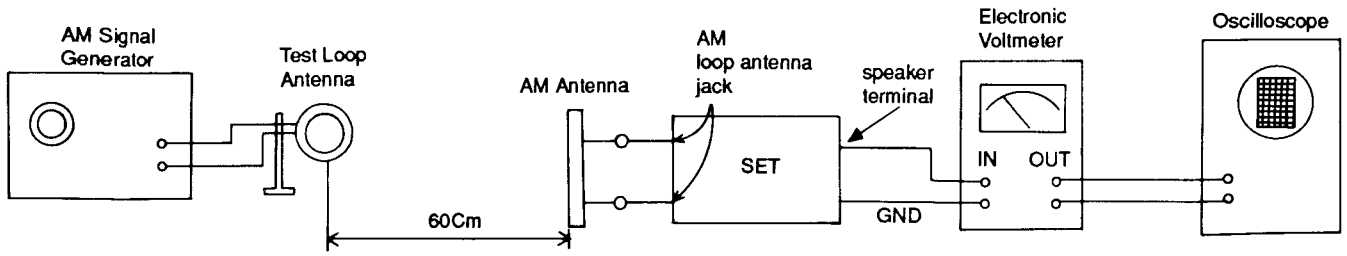


FIG. 4) AM TRACKING

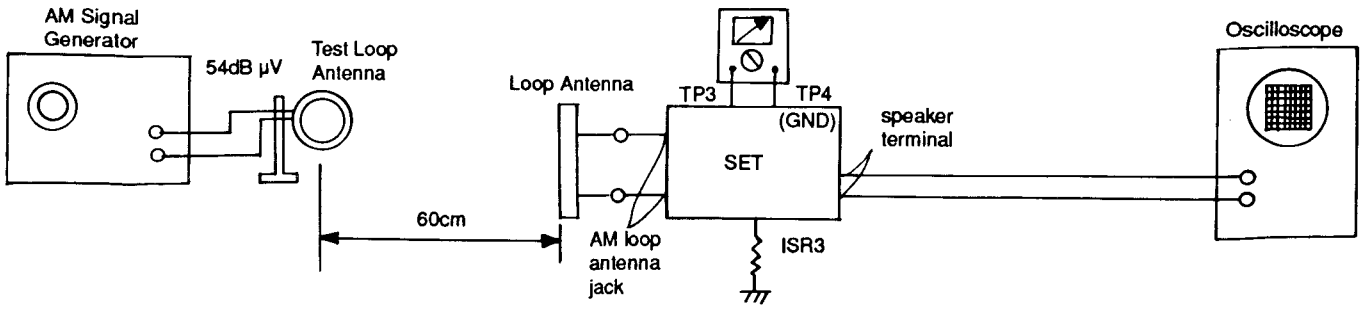
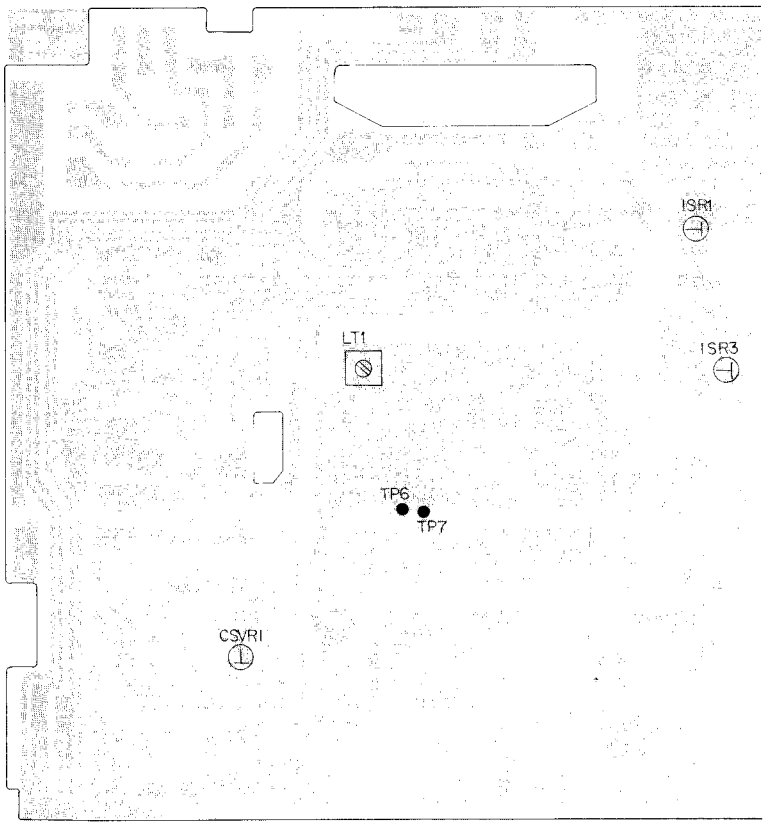


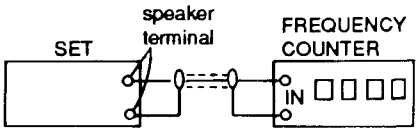
FIG. 5) AM AUTO SEARCH LEVEL

2. TAPE

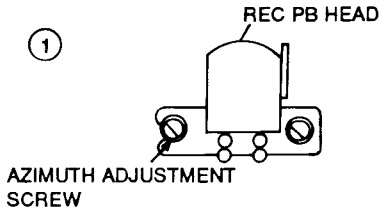
1) ADDITIONAL TEST EQUIPMENTS
   ① MTT-111 (or equivalent) : Test tape on which 3KHz signal is recorded → Tape speed adjustment
   ② MTT-5521 (or equivalent) or blank tape
   ③ MTT-114NA (or equivalent) : Test tape on which 12.5KHz signal is recorded → Azimuth adjustment
2) LOCATION OF ADJUSTMENT POINTS (PARTS SIDE)

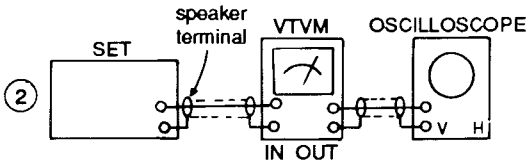
MAIN PCB



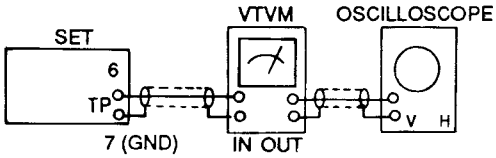


<FIG. 1>





<FIG. 2>



<FIG. 3>

3) ADJUSTMENT PROCEDURE * High speed adjustment is not required.

ITEM	CONNECTION	PREPARATION	ADJUSTMENT POINT	RESULT & REMARK
TAPE SPEED (normal speed) ADJUSTMENT	FIG. 1	Insert MTT-111 to deck A or B. Press PLAY.	CSVR1	3KHz
AZIMUTH (DECK A, B) ADJUSTMENT	FIG. 2 ②	Insert MTT-114 to deck A. (and B) Press PLAY.	<FIG. 2> : ①	Maximum output and same phase of L, R channel. Fix the screw after adjustment.
BIAS OSCILLATION FREQUENCY ADJUSTMENT	FIG. 3	Insert MTT-5521 to deck A. Press RECORD.	LT1	85KHz

3. CD

1) MEASURING INSTRUMENT

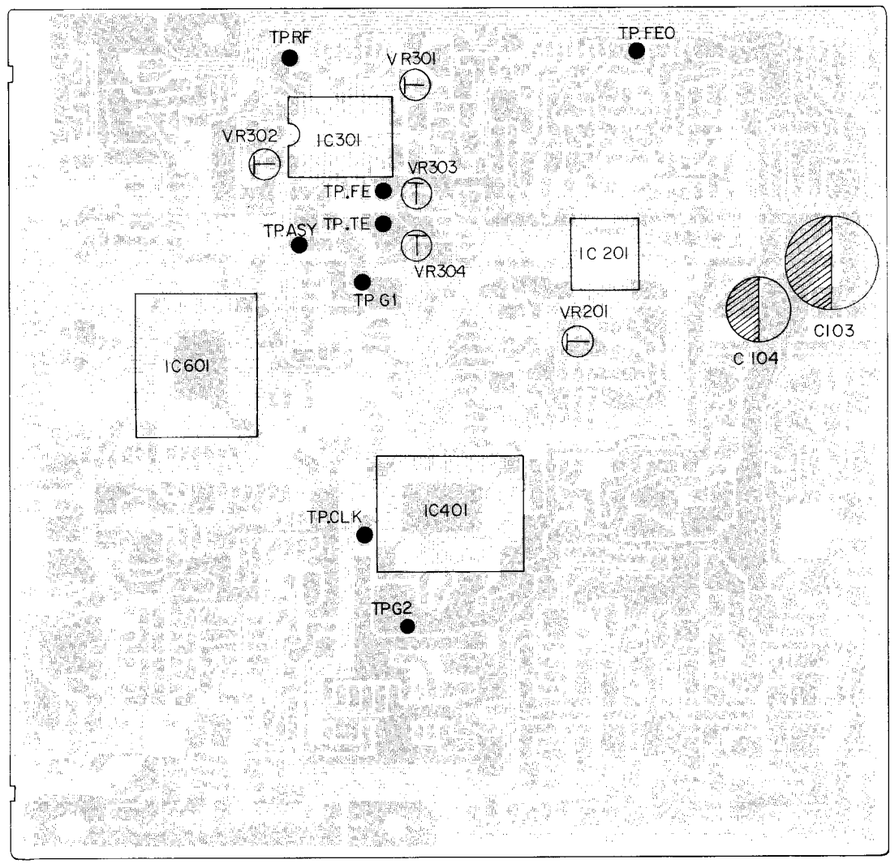
1) Oscilloscope (100MHz≧Frequency)
2) Probe (10 : 1)
3) Frequency counter

2) IMPORTANTS

1) Semi-Volume position can be a little different according to unit.
2) Be sure not to use a warped or dirt-build up disc in adjusting.
3) When adjusting Semi-Volume, use plastic screw driver.

3) LOCATION OF ADJUSTMENT POINTS (PARTS SIDE)

CD PCB

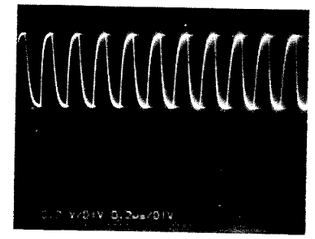


VR201	:	CLV adjustment	TP.FE	:	To oscilloscope signal port
VR301	:	E-F balance adjustment	TP.TE	:	To oscilloscope signal port
VR303	:	Focus gain adjustment	TP. CLK	:	To oscilloscope signal port
VR302	:	Focus bias adjustment	TP.G1	:	To oscilloscope GND port
VR304	:	Tracking gain adjustment	TP.G2	:	To oscilloscope GND port

4) ADJUSTMENT PROCEDURE

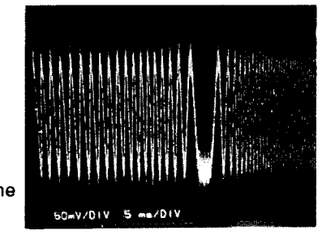
(1) CLV ADJUSTMENT
① Turn power on and load a disc.
② Frequency counter connection
(+) terminal ; TP. CLK
(–) terminal ; TP. G2
③ Connect TP.ASY to TP. G1
④ Adjust VR201 so the frequency counter reads 4.38 ~ 4.40MHz. (Adjust in stop mode)
⑤ Disconnect TR. ASY from TP.G1

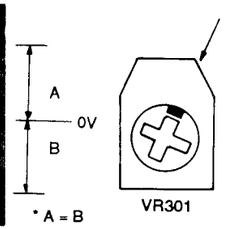
CLV



(2) E-F BALANCE ADJUSTMENT
① Turn power on and load a disc.
② Press play.
③ Oscilloscope setting and connection
VOLT/DIV ; 50mV (+) terminal ; TP.TE
TIME/DIV ; 5mS (–) terminal ; TP. G1
④ Adjust VR304 fully counter clockwise
⑤ Adjust VR301 so the waveform is as shown in the picture.
⑥ Set VR304 back to the place it was before adjustment.

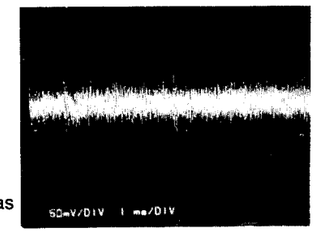
E-F BALANCE

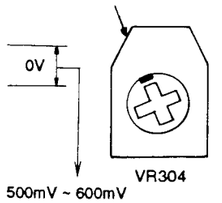




(3) TRACKING GAIN ADJUSTMENT
① Turn power on and load a disc.
② Press play.
③ Oscilloscope setting and connection
VOLT/DIV ; 50mV (+) terminal ; TP.TE
TIME/DIV ; 1mS (–) terminal ; TP. G1
④ Adjust VR304 so the peak to peak waveform is as shown in the picture.

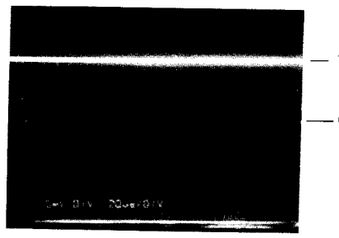
TRACKING GAIN

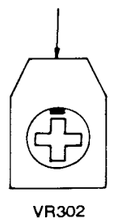




(4) FOCUS BIAS ADJUSTMENT
① Turn power on and load a disc.
② Oscilloscope setting and connection
VOLT/DIV ; 10mV (+) terminal ; TP.FE
TIME/DIV ; 20 μS (–) terminal ; TP. G1
③ Adjust VR302 so the waveform is as shown in picture. (Adjust in stop mode)

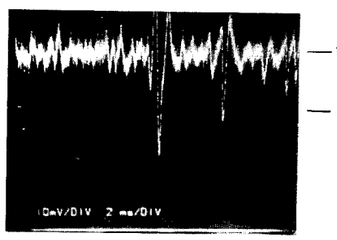
FOCUS BIAS

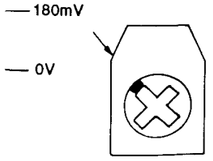




(5) FOCUS GAIN ADJUSTMENT
① Turn power on and load a disc.
② Press play.
③ Oscilloscope setting and connection
VOLT/DIV ; 10mV (+) terminal ; TP.FE
TIME/DIV ; 2mS (–) terminal ; TP. G1
④ Adjust VR303 so the peak to peak waveform is shown in the picture.

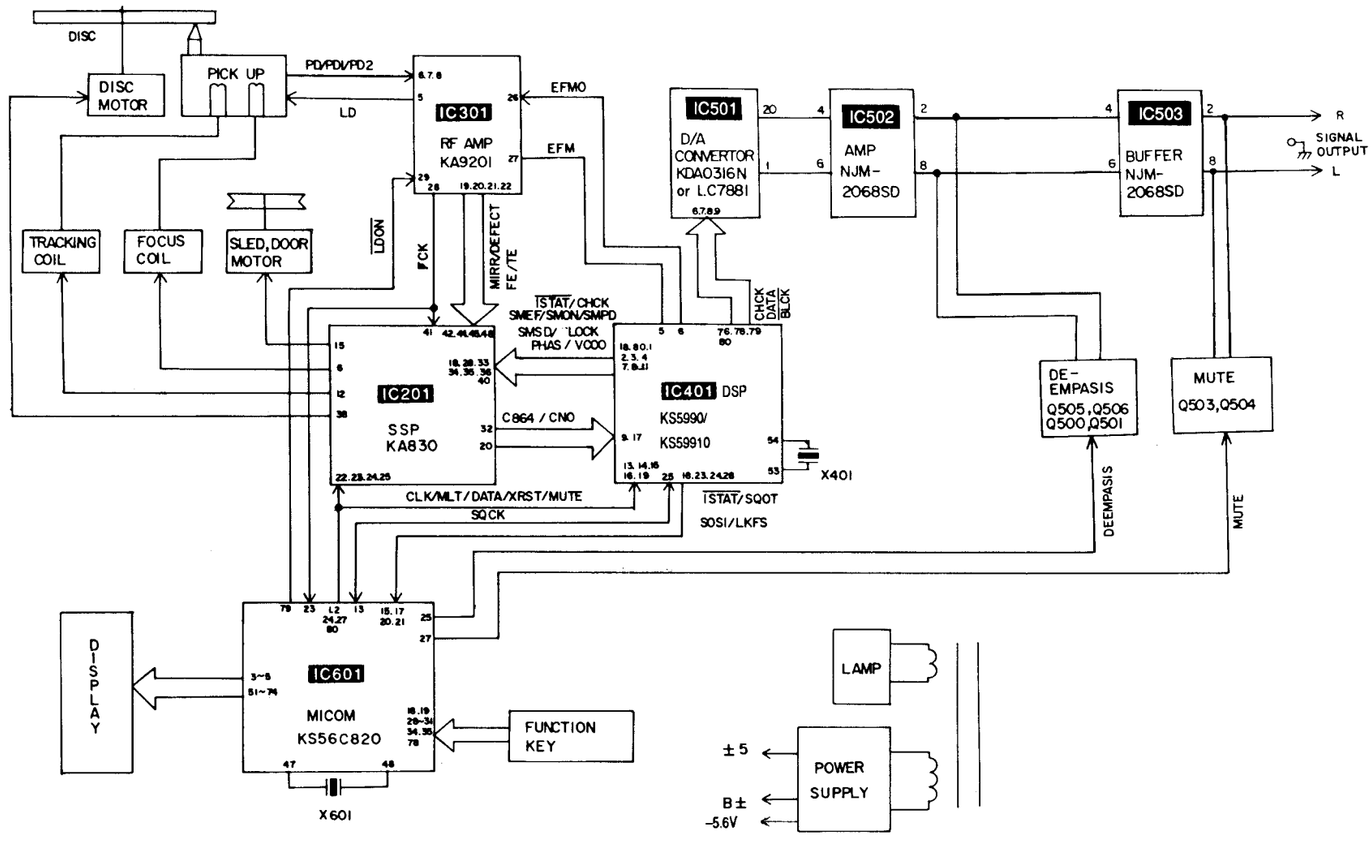
FOCUS GAIN





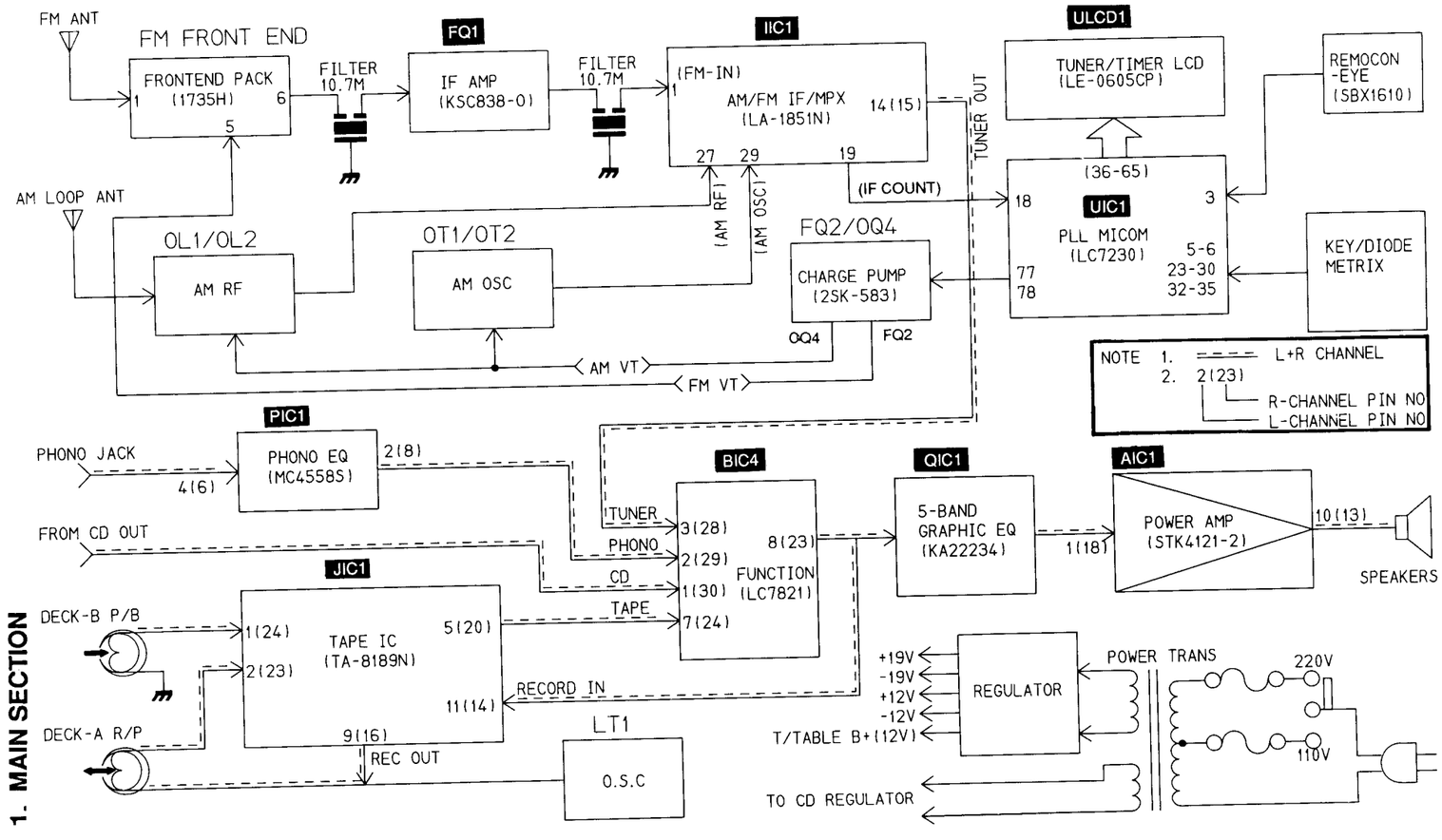
(Pictures taken in 10 : 1 probe)

2. CD SECTION



■ BLOCK DIAGRAM

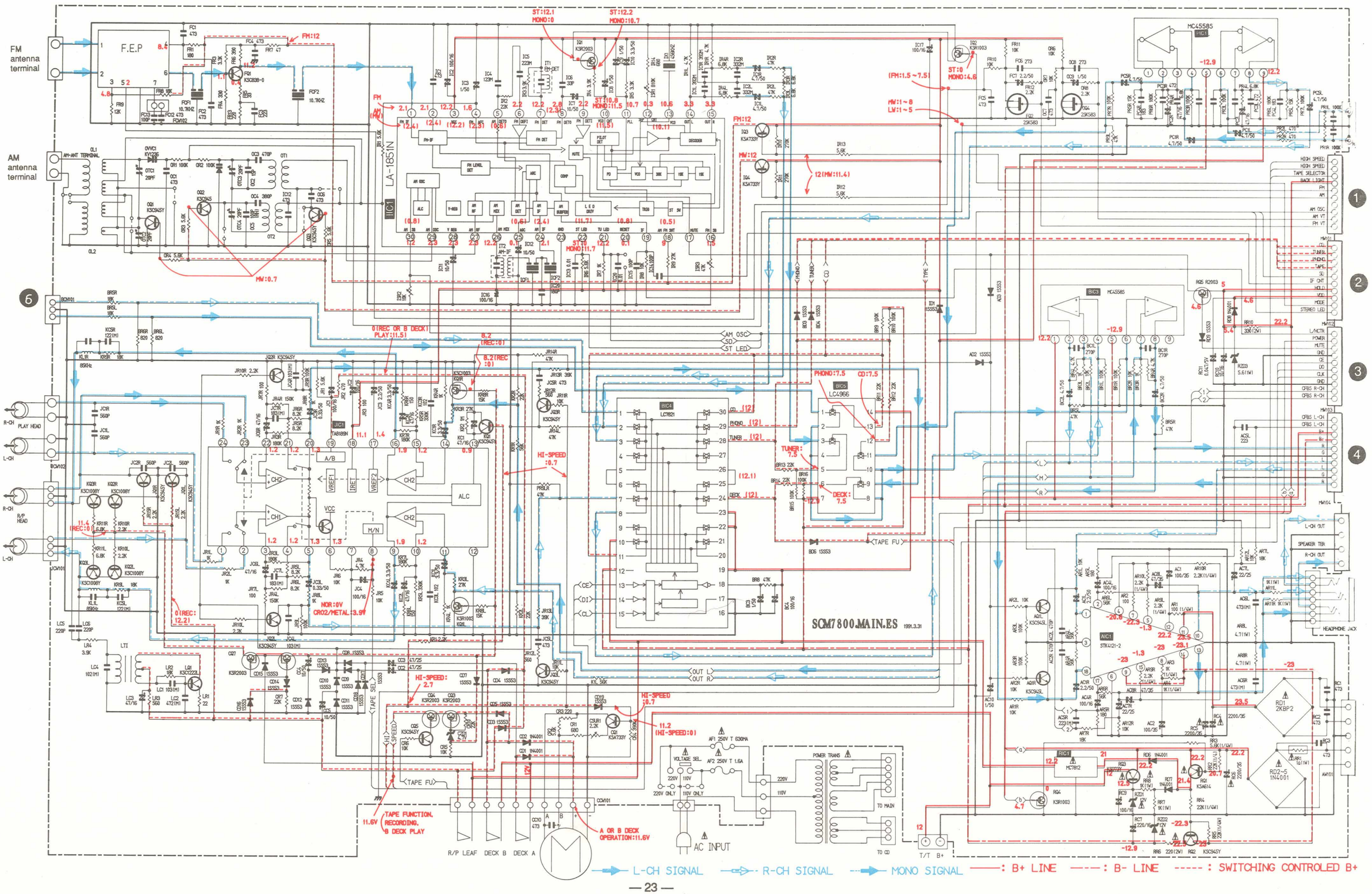
1. MAIN SECTION



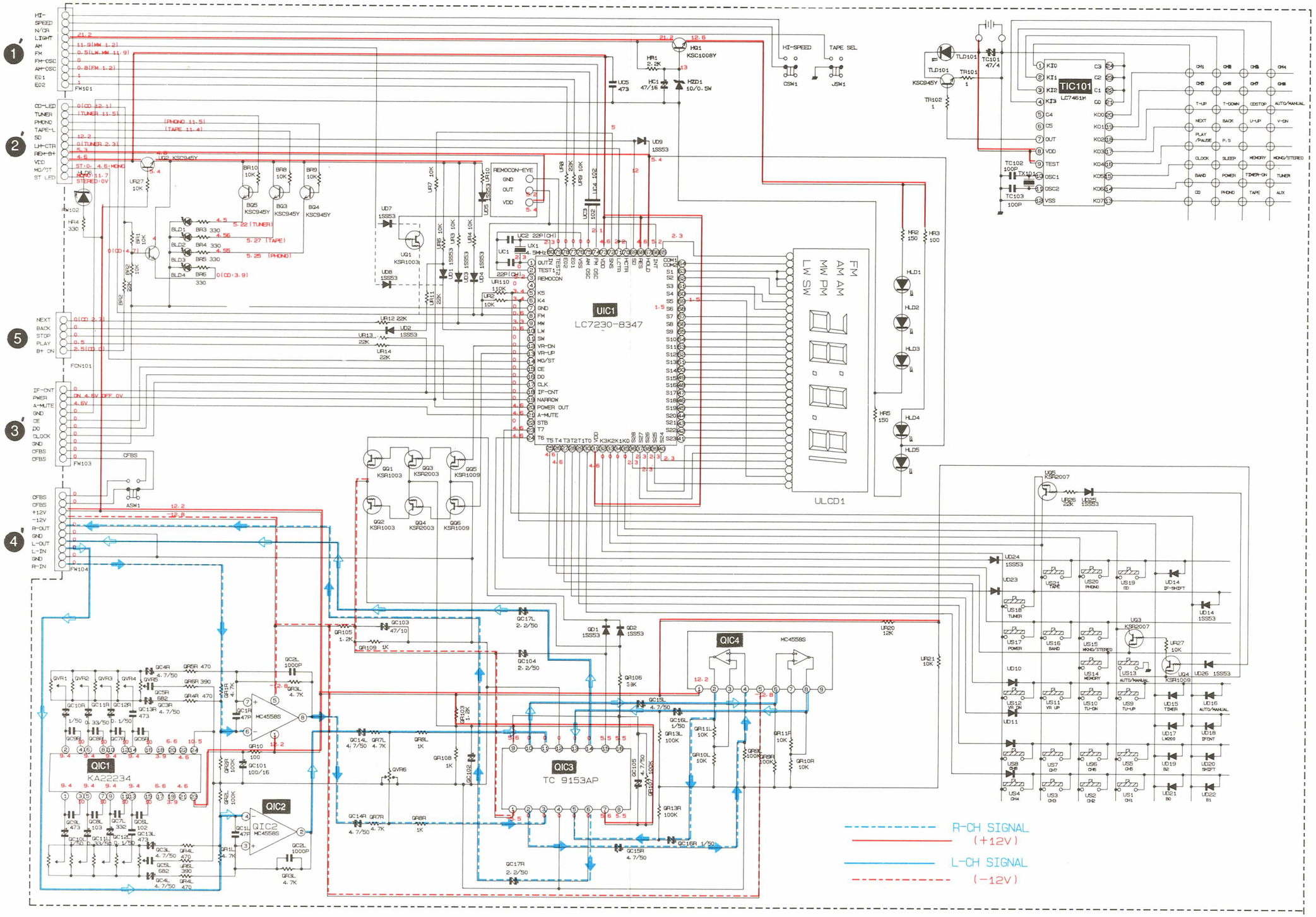
■ SCHEMATIC DIAGRAM

1. MAIN SECTION

1. The unit of all resistors is Ω unless otherwise stated. (K : K Ω , M : M Ω), All resistors are 1/4W or 1/8W unless otherwise stated.
2. The unit of all capacitors is μF unless otherwise stated. (P : PF)
3. The schematic diagram is subject to change upon improvement without prior notice.
4. ⚠ indicates parts for circuit safe guarding purposes. Therefore, when replacing, be sure to use specified parts only.

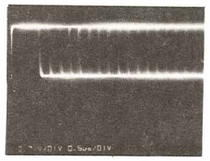


2. FRONT SECTION



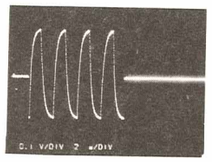
3. CD SECTION

① EFM

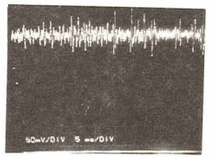


0.2V/DIV 0.5 µS/DIV

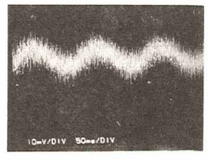
② FEO (no disc)



③ FEO (play)



④ TEO



IC301 KA9201 (RF-AMP)

IC201 (SSP) KA8830

IC501 (DAC) KDA0316

IC502 NJM2068SD

IC503 NJM2068SD

IC401 (DSP) KS5990 /59910

IC601 (µ-COM) KS56C820

IC101 MC7805

IC102 MC79L05

LCD1

REMOTE CONTROL (TO MAIN) NEXT BACK STOP PL/PA PC

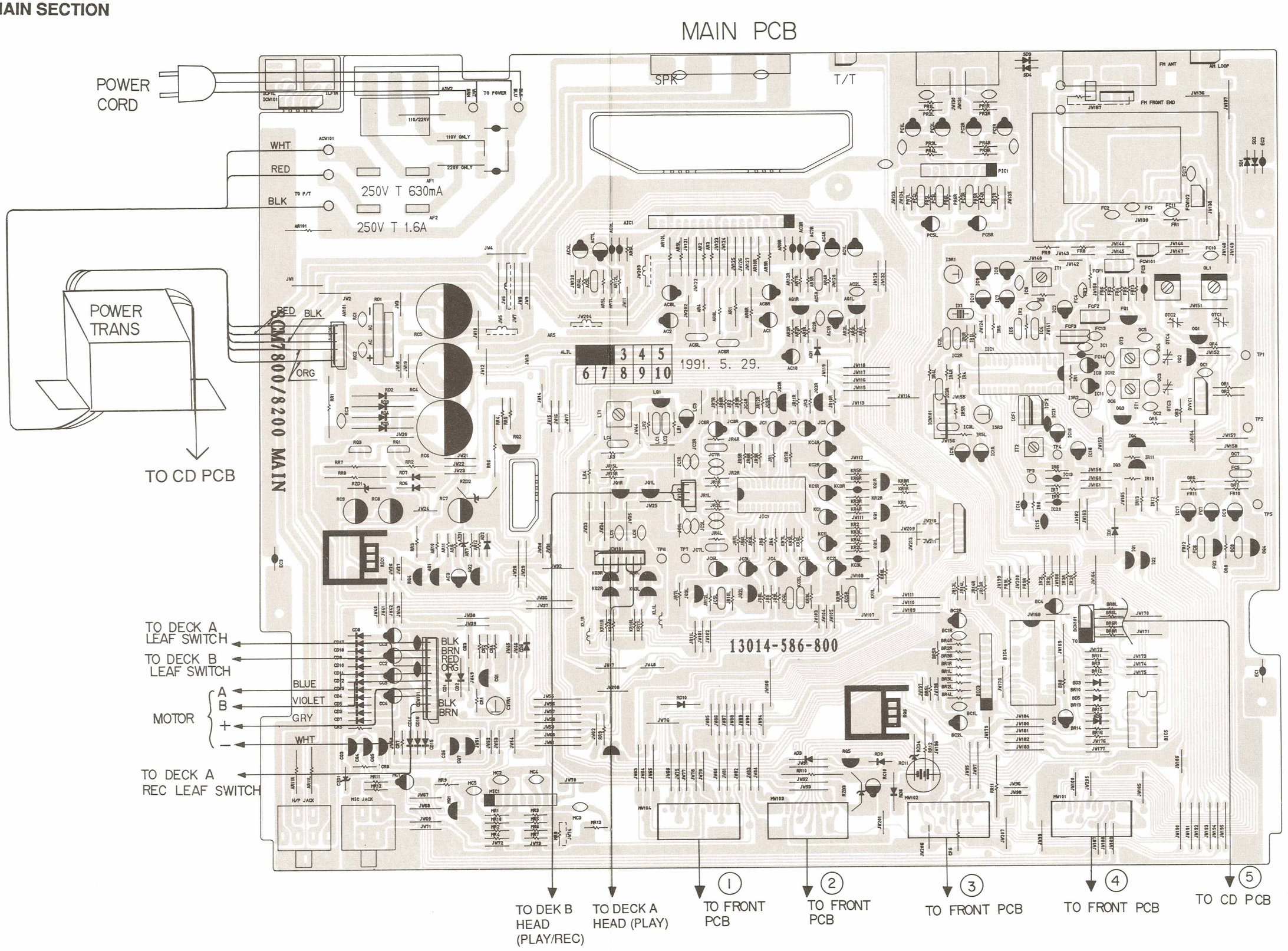
LED1 - LED8 SEL3913 x 8

B+ DIGITAL SIGNAL

B- ANALOG SIGNAL

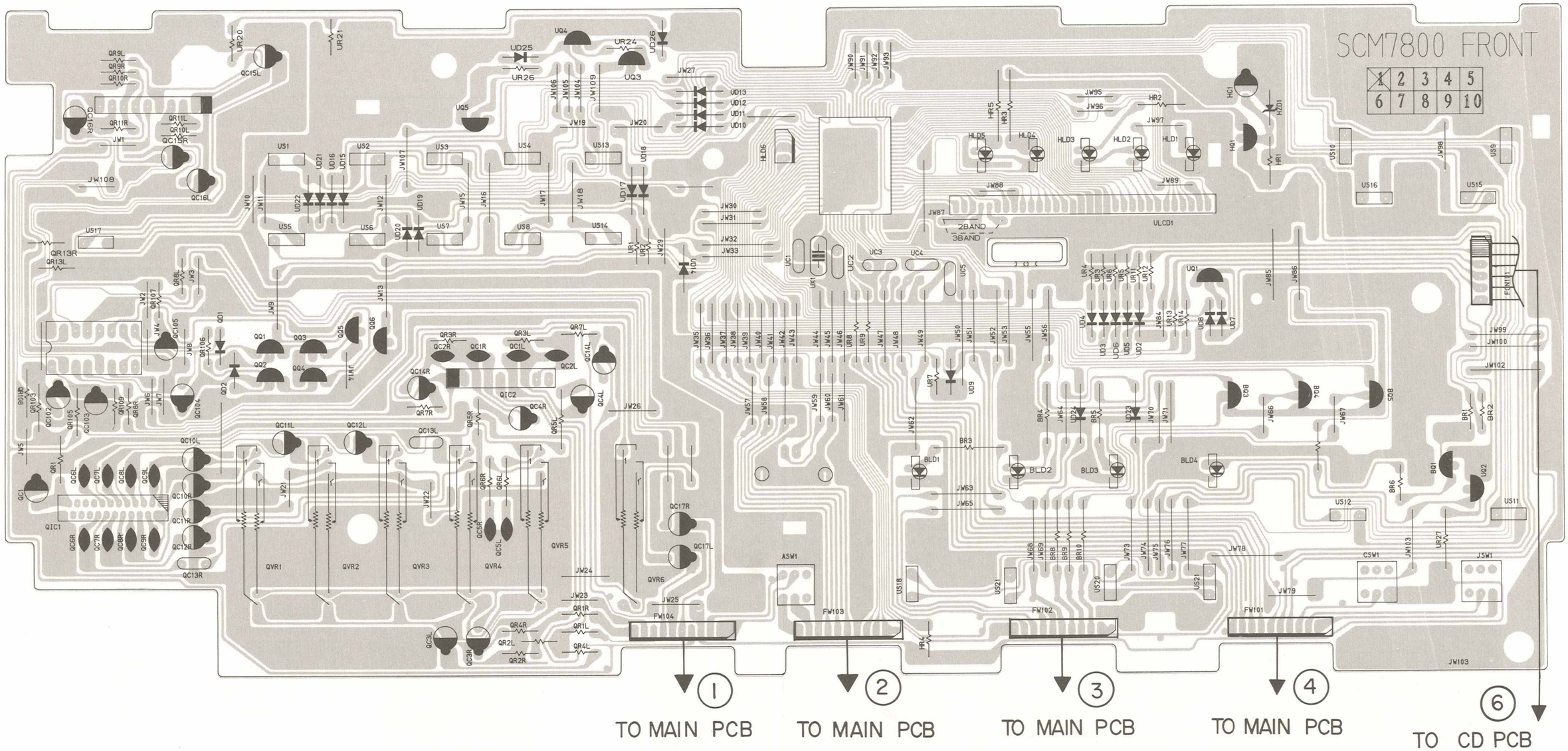
■ WIRING DIAGRAM (PARTS SIDE)

1. MAIN SECTION

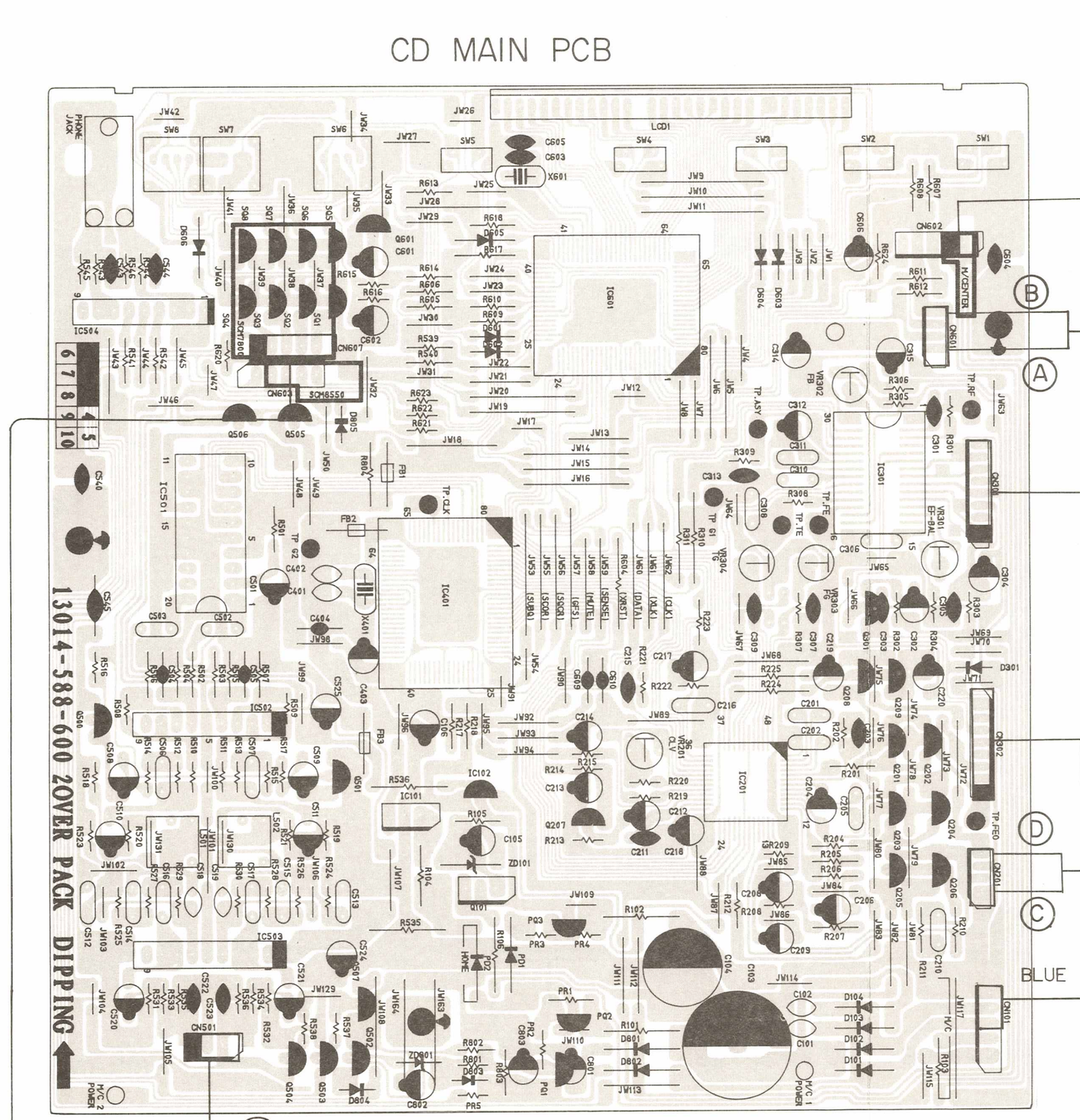


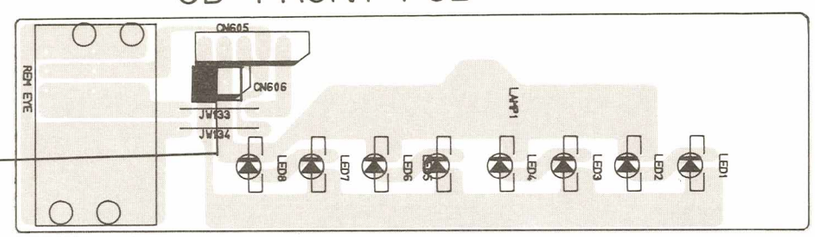
2. FRONT SECTION

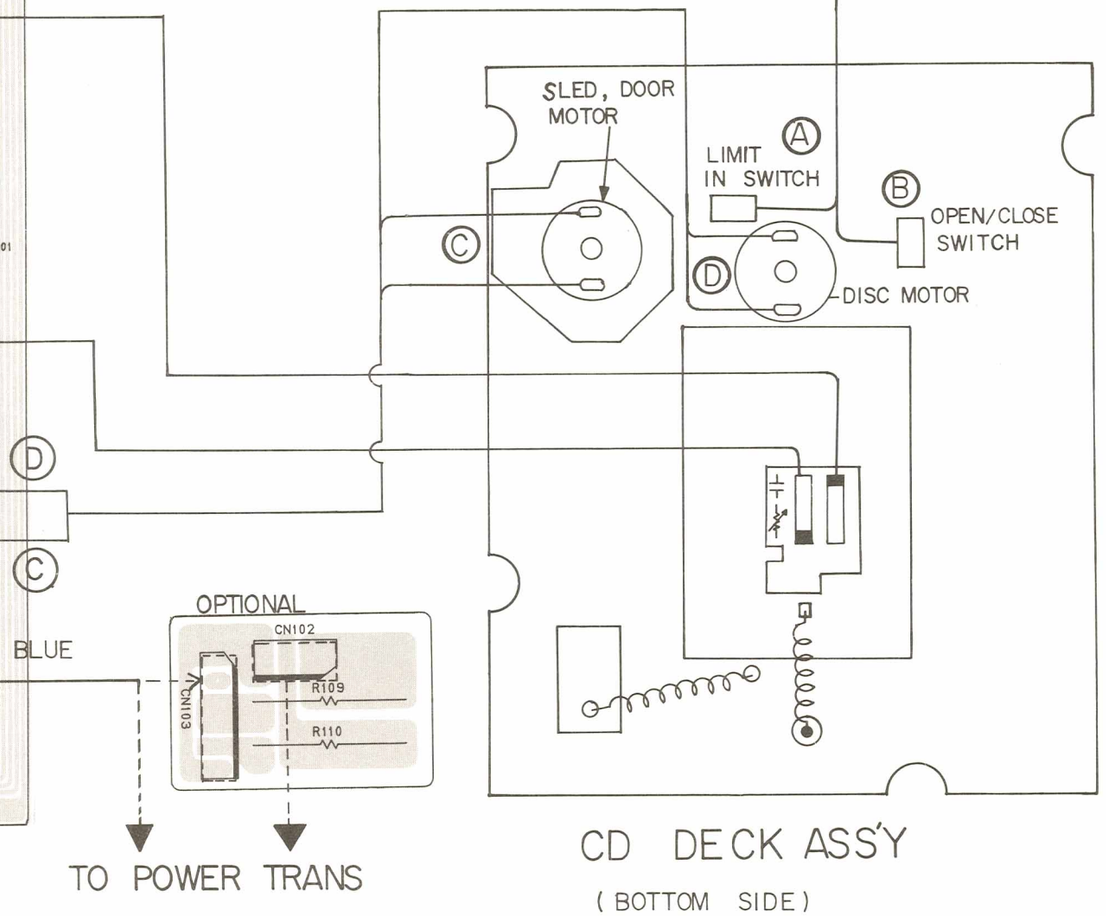
FRONT PCB



3. CD SECTION


CD MAIN PCB
13014-588-600 2OVER PACK DIPPING
TO FRONT PCB
6
5
TO MAIN PCB


CD FRONT PCB
CN605
CN606
JW33
JW34
LED1
LED2
LED3
LED4
LED5
LED6
LED7
LED8

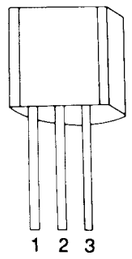

SLED, DOOR MOTOR
LIMIT IN SWITCH
OPEN/CLOSE SWITCH
DISC MOTOR
CD DECK ASS'Y
(BOTTOM SIDE)
OPTIONAL
CN102
CN103
R109
R110
BLUE
TO POWER TRANS

■ IC & TR INTERNAL DIAGRAM

1. MAIN

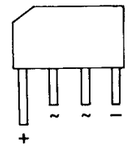
- TR & DIODE

1)

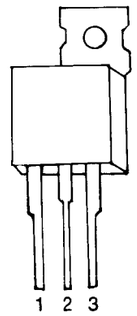


TR	1	2	3
KSR2003, KSR1003, KSR1007 KSR1009, KSR2007	E	C	B
KSC945, KSC1008 KSA733, KSC838	E	B	C

2) 2KBPO2 (DIODE)
: RD1

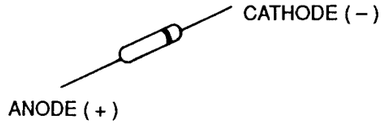


3)

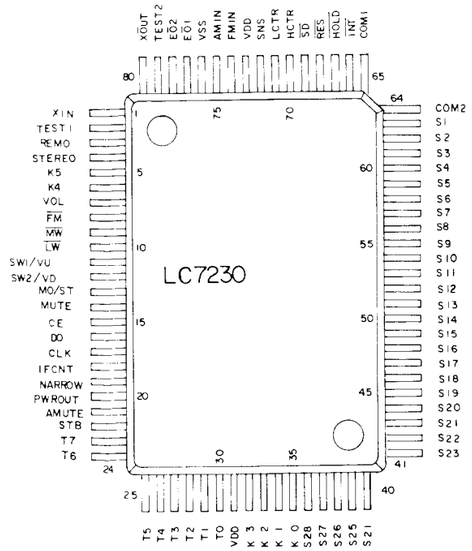


TR	1	2	3
MC7812C	IN	GND	OUT
KSD73-Y	B	C	E

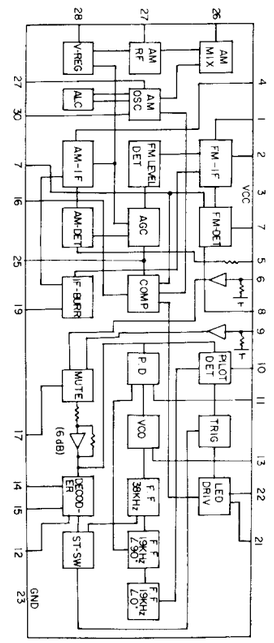
4) 1N4148M/1SS53, 1N4001, ZENER DIODE



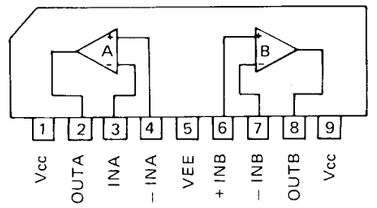
- LC7230-8347 (PLL μ-COM IC)
: UIC1



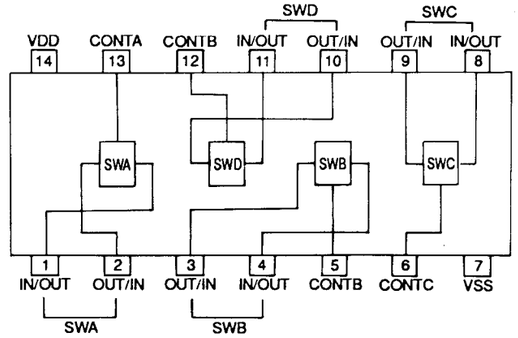
- LA1851N (FM, AM, IF IC)
: IIC1



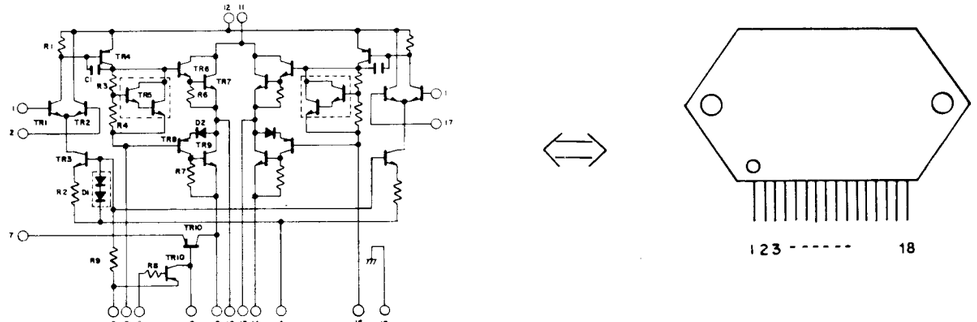
- MC4558S (OP AMP) : QIC2, 4
MIC1, BIC3, PIC1



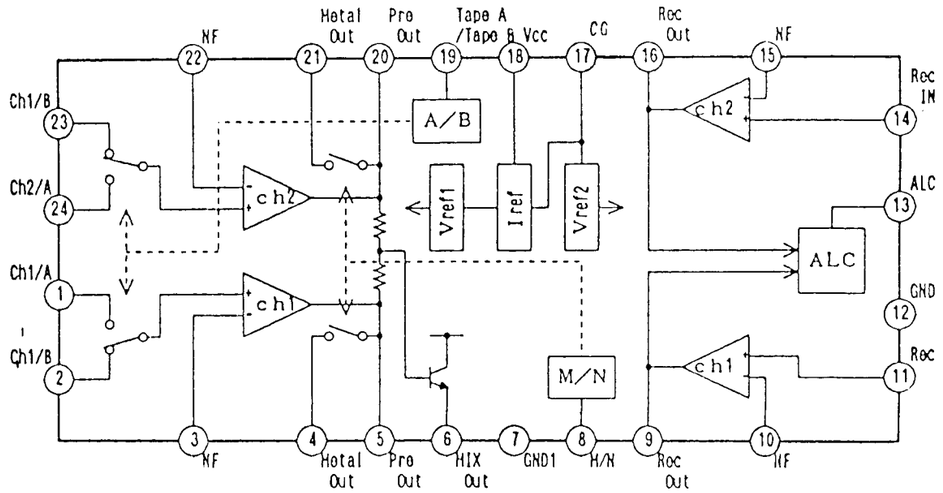
- LC4966 (IC-SWITCH) : BIC5



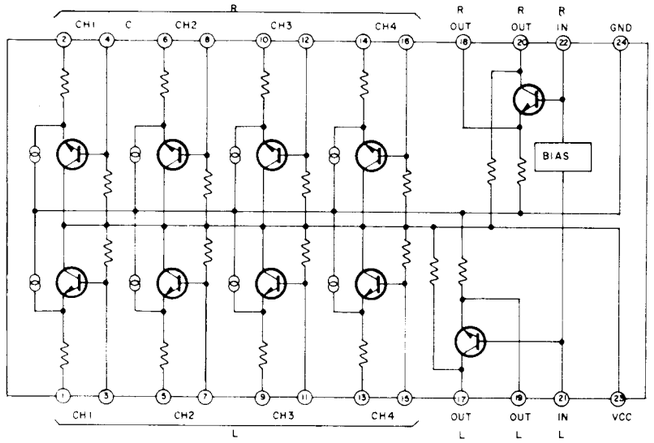
- STK4121-2 (POWER IC) : AIC1



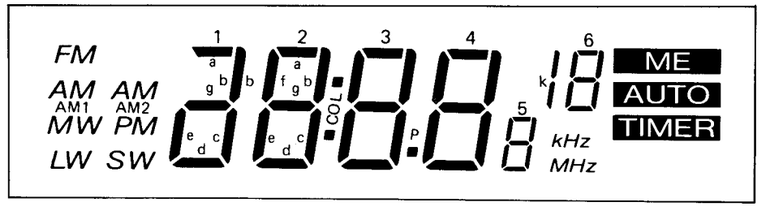
- TA8189N (PRE/REC AMP) : JIC1



- KA22234 (EQUALIZER IC) : QIC1

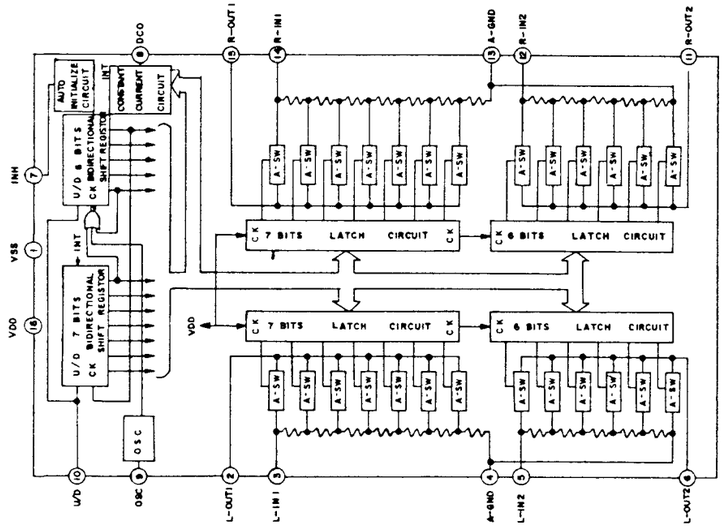


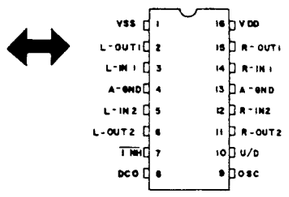
- LE-0605CP (TUNER LCD) : ULCD1



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COM1	COM1			AM 1	MW	SW	PM		B 1	C 1	F 2	E 2	D 2	A 2	F 3	E 3
COM2		COM2	FM			LW		AM2	ADE G1	COL	B 2	G 2	C 2		B 3	G 3
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
COM1	D 3	A 3	F 4	E 4	D 4	A 4	G 5	BE 5	KHz	E 6	D 6	TIME-R	A 6	ME	F 6	
COM2	C 3		B 4	G 4	C 4		ACD F 5		MHz P	G 6	C 6	K		AUTO	B 6	

- TC9153AP (IC-E/C VR) : QIC3

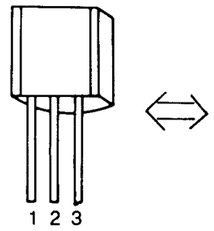




2. CD

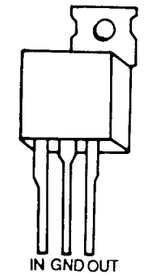
- TR

1)

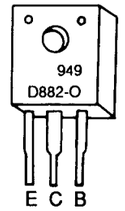


TR	1	2	3
KSA931, KSC2331, KSR2003 KSR1003, KSR1007	E	C	B
KSA708, KSB564, KSC945 KSC1008	E	B	C
MC79L05	G	IN	OUT

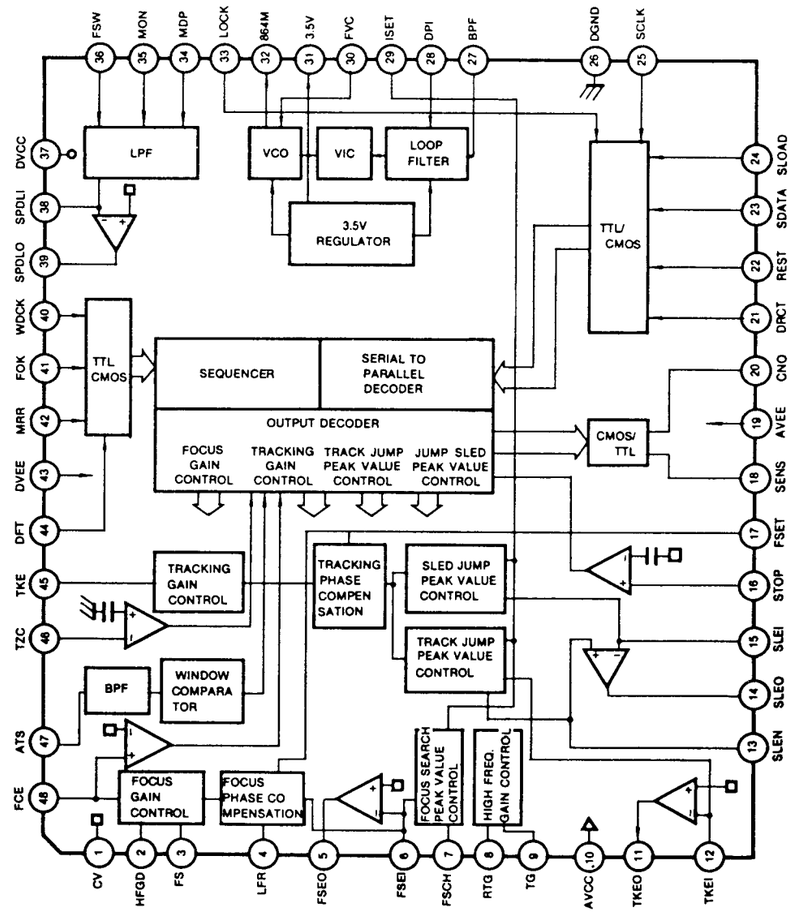
2) MC7805C



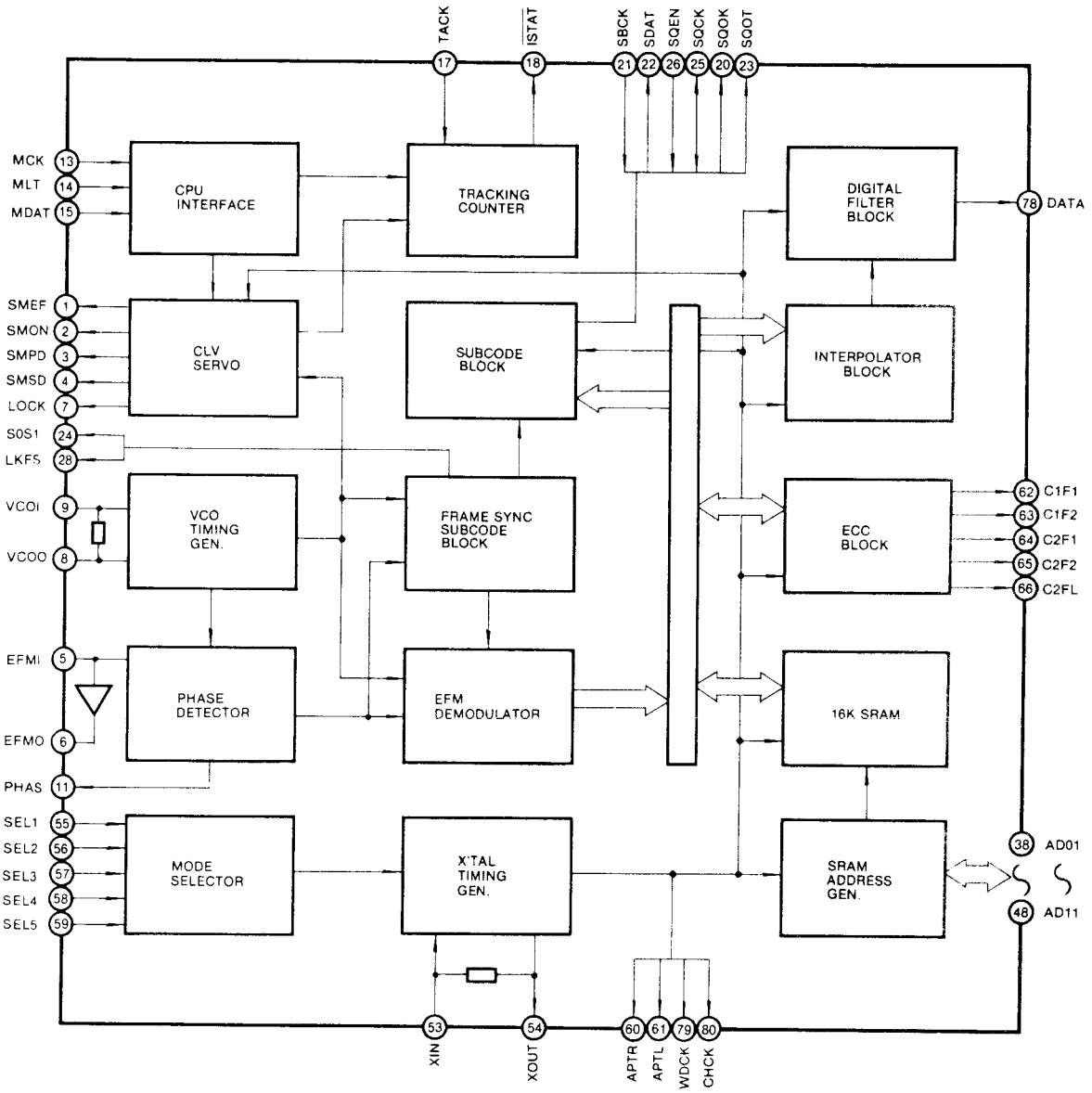
3) KSD882, KSB772



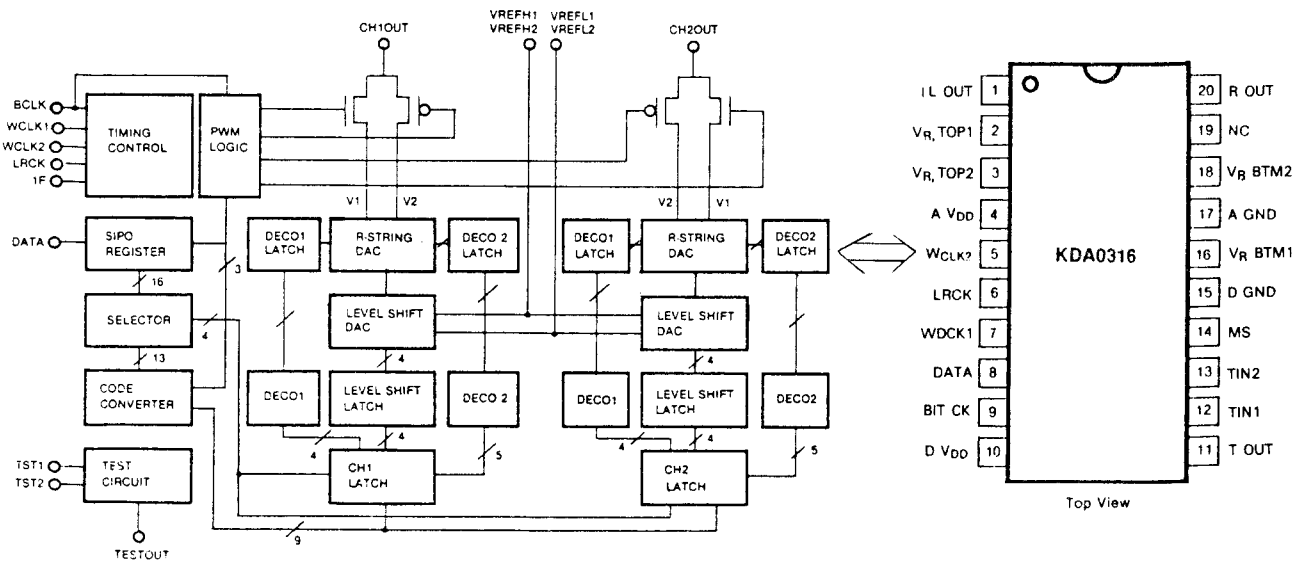
- KA830 (IC-SS PROCESSOR) : IC201



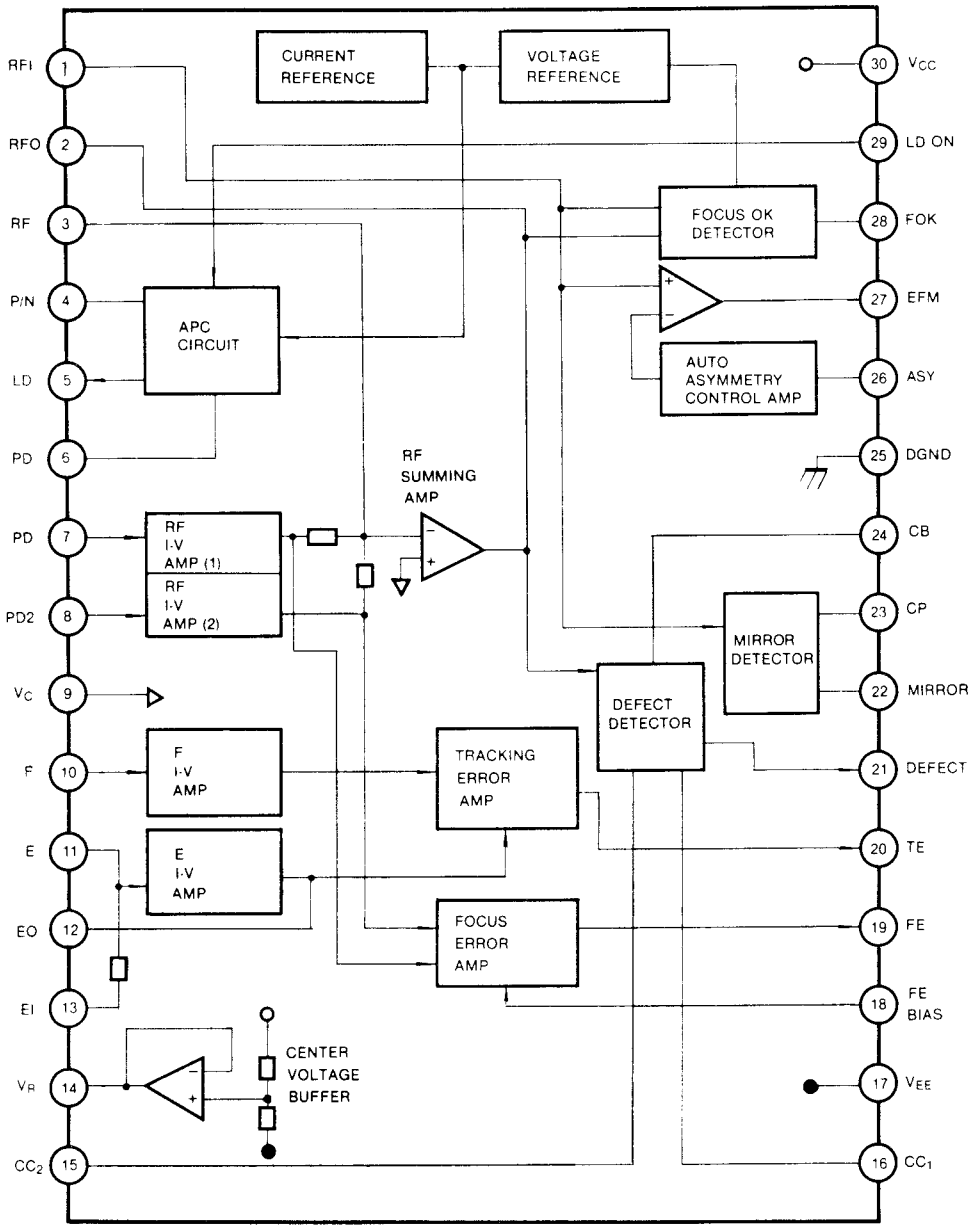
● KS5990/KS59910 (DIGITAL SIGNAL PROCESSOR) : IC401



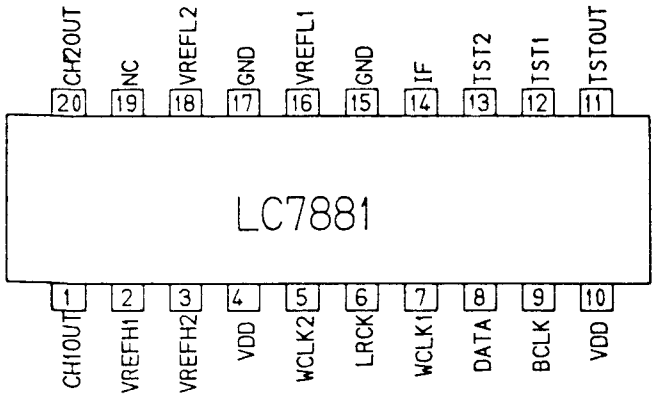
● KDA0316LN (D/A CONVERTOR) : IC501
* OPTIONAL



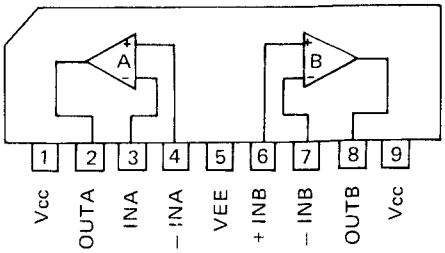
● KA9201 (RF AMP) : IC 301



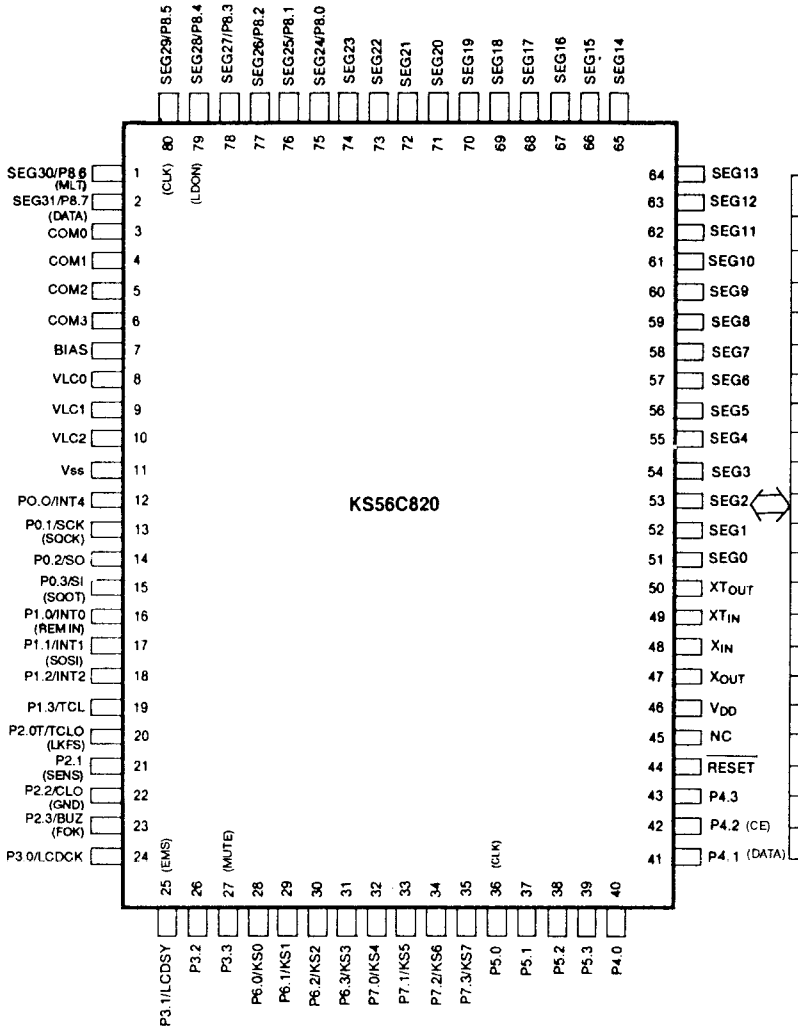
● LC7881 (D/A CONVERTOR) : IC501
* OPTIONAL



● NJM2068SD (OP AMP) : IC502, 503

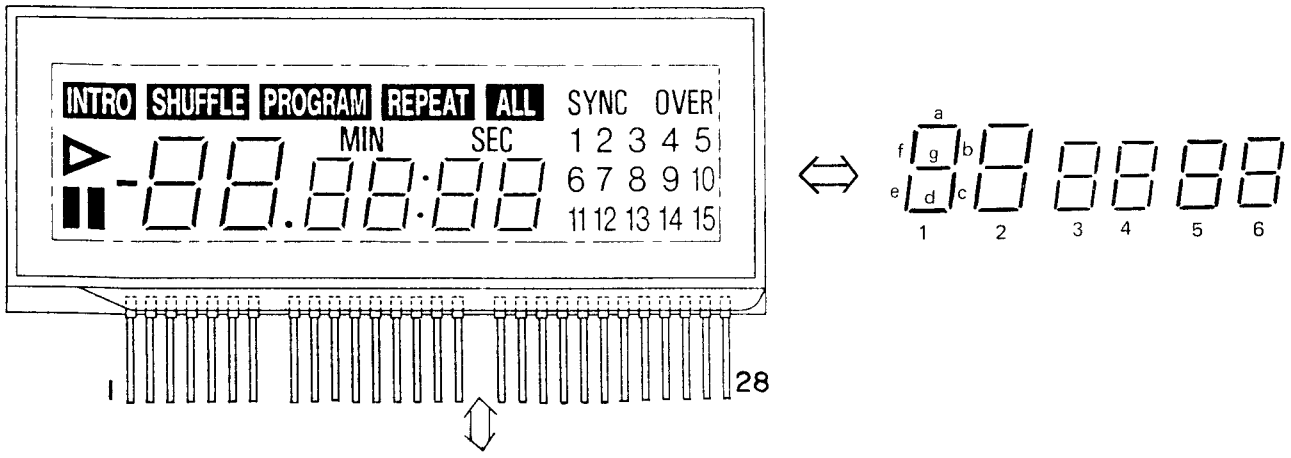


● KS56C820 (MICOM) : IC601



Pin Name	Pin description
P1.0-P1.3	4-bit Input
P2, P7	4-bit Input/Output
P3, P6	I/O mode selectable in 1-bit unit by software
P4, P5	4-bit input/output, N-ch open drain
P8.0-P8.7	Outputs in 1-bit unit (shared with segment outputs)
SEG0-SEG23	Segment output for LCD display
SEG24-SEG31	Segment output for LCD display (shared with Port 8)
COM0-COM3	Common signal output for LCD display
VLC0-VLC2	LCD power supply pin
BIAS	LCD power supply control pin for 3/5V operating
LCDCK	LCD clock output for display expansion
LCDSY	LCD sync. clock output for display expansion
TCL	Timer/Counter external clock input
TCLO	Timer/Counter clock output
INT0, 1, 2, 4	External interrupt input
CLO	Clock output
BUZ	2KHz clock output for buzzer
KS0-KS7	Semi-interrupt input detecting external falling edge
SCK, SI, SO	SCK: serial clock, SI: serial input, SO: serial output
XIN, XOUT	Crystal/Ceramic or RC clock I/O for Main-system clock
XTIN, XTOUT	Crystal clock I/O for sub-system clock

● HLC8036 (CD LCD) : LCD1

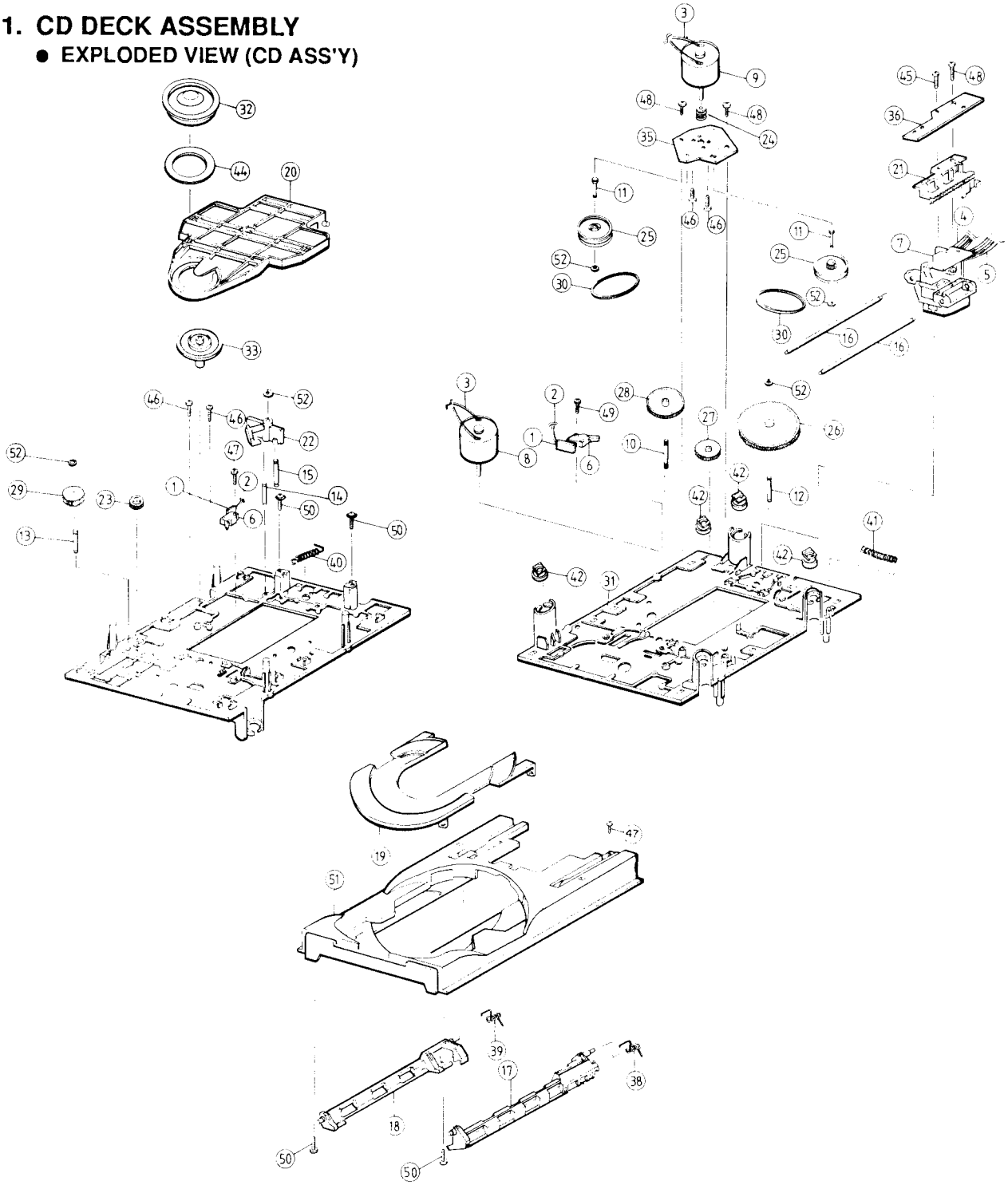


No.	COM. 1	COM. 2	COM. 3	No.	COM. 1	COM. 2	COM. 3	No.	COM. 1	COM. 2	COM. 3
1	COM.1			11	PROGRAM	3f	3e	20	SYNC	6f	6e
2		COM. 2		12	3 a	3g	3d	21	6 a	6g	6d
3			COM. 3	13	MIN	3b	3c	22	OVER	6b	6c
4	INTRO	▷	▮▮	14	REPEAT	4f	4e	23	1	6	11
5	—	1f	1e	15	4 a	4g	4d	24	2	7	12
6	1 a	1g	1d	16	:	4b	4c	25	3	8	13
7		1b	1c	17	ALL	5f	5e	26	4	9	14
8	SHUFFLE	2f	2e	18	5 a	5g	5d	27	5	10	15
9	2 a	2g	2d	19	SEC	5b	5c	28	N C		
10	•	2b	2c								

■ EXPLODED VIEW

1. CD DECK ASSEMBLY

● EXPLODED VIEW (CD ASS'Y)



● MECHANICAL PARTS (CD ASS'Y)

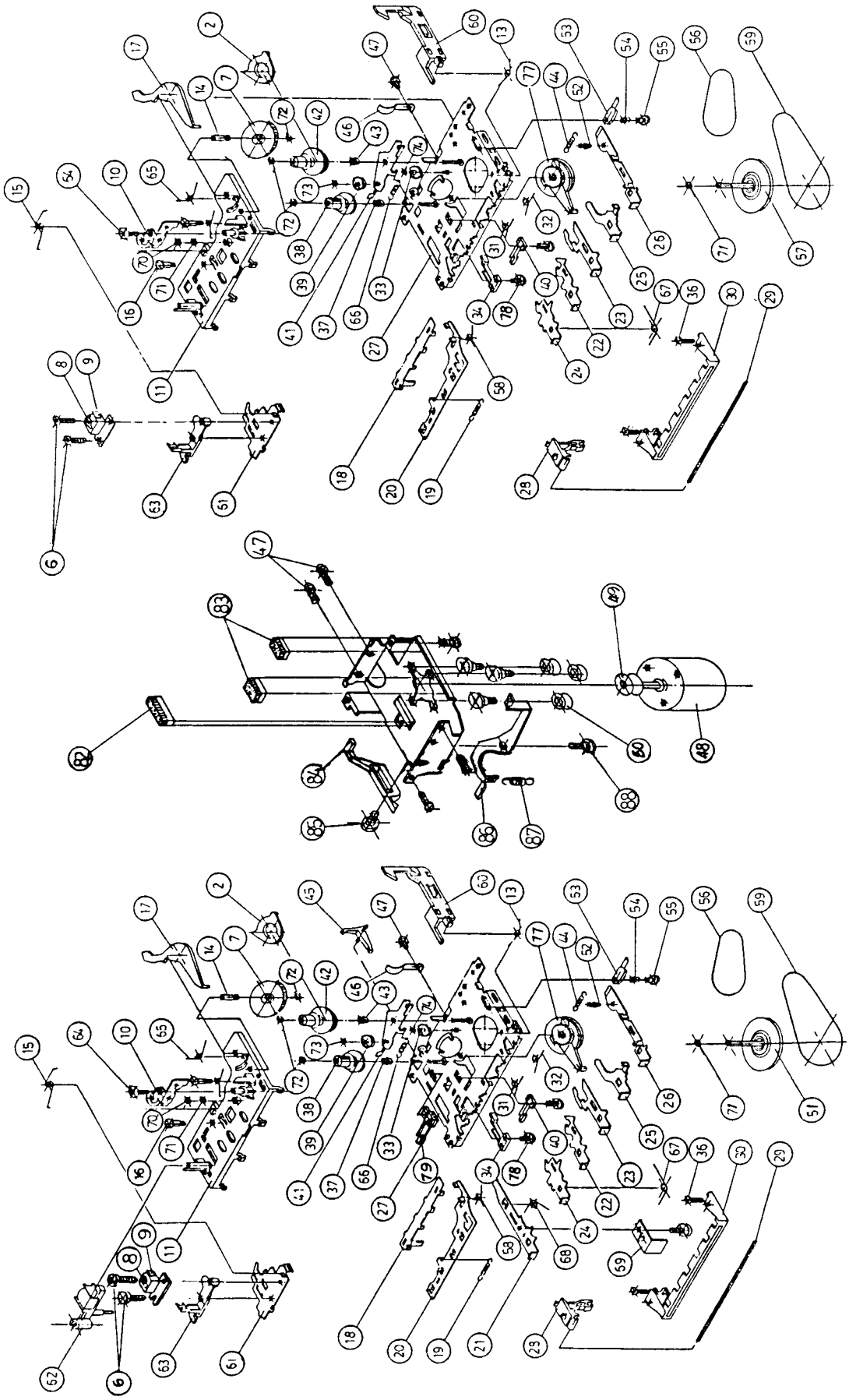
No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
	14929-421-010	DECK-CD(DRAW) ; CMS-55/A	1	
1	13014-582-500	PCB-MICRO SW ; IVO	2	
2	13029-041-130	CONNECTOR ; 4PIN(SW)	1	
3	13029-041-230	CONNECTOR ;4PIN(MOTOR)	1	
4	13052-901-040	CONNECTOR ; 8PIN(SHIELD)	1	
5	13079-618-125	CONNECTOR ; 8PIN	1	
6	13579-901-010	MICRO-S/W;SSCTL1217A	2	

No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
7	14239-101-110	SAMSUNG OPTICAL HEAD ; SOH89T1	1	
8	14769-057-240	MOTOR-SPINDLE ; RF-310T(SHAFT 18.9)	1	
9	14769-057-250	MOTOR-FEED ; RF-310T(SHAFT 10.9)	1	
10	15104-531-010	SHAFT-GEAR(C) ; SUM24L(SERRATION)SCM7550	1	
11	15104-531-110	SHAFT-GEAR(D) ; SUM24L SCM7550L	2	
12	15104-531-210	SHAFT-GEAR(A) ; SUM24L SCM7550L	1	
13	15104-531-220	SHAFT-GEAR(B) ; SUM24L SCM7550L	1	
14	15104-531-310	SHAFT-LEVER(A) ; SUM24L SCM7550	1	
15	15104-531-410	SHAFT-LEVER(B) ; SUM24L SCM7550	1	
16	15104-531-510	SHAFT-PU ; SUS 420J2 SCM7550	2	
17	15252-501-110	LEVER-LIFTER(R) ; P.B.T G15% SCM7550	1	
18	15252-501-210	LEVER-LIFTER(L) ; P.B.T G15% SCM7550	1	
19	15252-501-310	LIFTER-DISC ; ABS BLK SCM7550	1	
20	15252-501-410	COVER-DISC ; P.B.T G15% SCM7550	1	
21	15253-503-310	GUIDE-PU ; P.O.M SCM7550	1	
22	15253-503-410	LEVER-MAIN ; P.O.M SCM7550	1	
23	15254-509-110	GEAR-DOOR SLIDING(A) ; P.A NTR SCM7550	1	
24	15254-513-610	GEAR-MOTOR ; P.O.M SCM7550	1	
25	15254-513-710	GEAR-PU(A) ; P.O.M SCM7550	2	
26	15254-513-810	GEAR-PU(B) ; P.O.M SCM7550	1	
27	15254-513-910	GEAR-PU(C) ; P.O.M SCM7550	1	
28	15254-514-010	GEAR-DOOR(A) ; P.O.M SCM7550	1	
29	15254-514-310	GEAR-DOOR(C) ; P.O.M SCM7550	1	
30	15274-501-520	BELT-MOTOR ; NEOPLENE 1.2T SCM7550	2	
31	16021-504-710	BRKT MAIN(M) ; E. G T1.6+POM SCM7550	1	
32	16604-538-310	PLATE CHUCK ; P.O.M SCM7550	1	
33	16604-538-410	TURN-TABLE ; P.C G20% SCM7550	1	
35	16624-571-410	BRKT-MOTOR ; EG 1.2T SCM7550	1	
36	16624-571-910	BRKT-P/U ; SECC 1.0T SCM7550	1	
38	16674-560-510	SPRING-LIFTER R ; STSW #27 SCM7550	1	
39	16674-560-610	SPRING-LIFTER L ; STSW #27 SCM7550	1	
40	16674-560-710	SPRING-COVER ; STSW #27 SCM7550	1	
41	16674-560-810	SPRING-LEVER ; STSW #27 SCM7550	1	
42	16804-517-820	RUBBER-DECK ; BUTYL SCM7550	4	
44	16844-520-210	SHEET-CHUCK ; HYMERON T0.5 SCM7550	1	
45	17008-120-063	SCREW-PH ; +M2X6 FE FZB DT-850	1	
46	17098-120-032	SCREW-BH ; +M2X3 FE FZW	4	
47	17108-520-063	SCREW-TAP PH ; 2S-2X6 FE FZB	1	
48	17148-526-081	SCREW-TAP, RH ; 2S-2.6X8 FE FZY	3	
49	17158-220-103	SCREW-TAP, BH ; 2-2X10 FE FZB	2	
50	17558-230-081	SCREW-TAP TITE SPEC ; S-3 X 8FZY	4	
51	17641-500-810	DOOR-DISC ; ABS BLK SCM7550	1	
52	18314-500-810	RING-O ; POLY SLIDER PI1.2 SCM7550	5	

* Parts which are not discribed in the CD DECK list are not serviceable.
If you need any other parts except those described, apply CD DECK ass'y.

2. CASSETTE DECK ASSEMBLY

- **EXPLODED VIEW (CASSETTE DECK ASS'Y)**



● MECHANICAL PARTS (CASSETTE DECK ASS'Y)

No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
	14929-104-961	TAPE DECK ; ADR1506FW		
2	10000-607-102	SENSOR REEL ; 1153-00080AA	2	
7	10000-607-107	GEAR CAN ; 11128-0391AA	2	
9	10000-523-008	RP HEAD ; MS 15R-AA2N1	2	
10	10000-607-110	ASS'Y PINCH ARM ; ADR15-006	2	
17	10000-607-117	ARM SENSOR ; 11102-00530AA	2	
28	10000-607-128	KEY KNOB ; 11133-00010AA	12	
33	10000-607-133	GEAR FF ; 11128-00080AA	2	
34	10000-607-134	SW LEAF (MAIN) ; MSW2526GNBKCV	2	
38	10000-607-138	REEL S ASS'Y ; ADR15-001	2	
39	10000-607-139	GEAR ROLLER-T ; 11128-00050AA	2	
40	10000-607-140	SW LEAF (REC) ; LSA1119EN	1	
42	10000-607-142	REEL T ASS'Y ; ADR15-002	2	
45	10000-607-145	LEVER REC SAFETY ; 11134-01000AA	1	
46	10000-607-146	SP PACK ; 51299-02506XC	2	
48	10000-502-020	MOTOR ; EG530 YD2B	1	
49	10000-607-149	PULLEY Y MOTOR ; 11145-00450AA	1	
51	10000-607-151	FLY WHEEL ASS'Y-S ; ADR15-003	1	
53	10000-607-153	CAM PAUSE LOCK ; 11116-00010AA	2	
55	10000-607-155	CAP ; 11117-00020AA	2	
56	10000-607-156	BELT SUB ; 34.7PI x 1.0T	2	
57	10000-607-157	FLY WHEEL ASS'Y-D ; ADR15-004	1	
59	10000-607-159	BELT MAIN ; 59.7PI x 1.0T	2	
60	10000-607-160	LEVER EJECT (F) ; 11134-01220AA	2	
62	10000-607-162	ARM MAGNETIC ; 11102-00520AA	1	
63	10000-607-163	BASE HEAD-M ; 11105-00030AA	2	
65	10000-607-165	SP PAUSE SAFETY ; 51263-02026	2	
77	10000-607-177	ARM F.R ASS'Y ; ADR15-005	2	
84	10000-607-184	LEVER RELEASE ; 11134-01240AA	1	
86	10000-607-186	LEVER SYNCRO ; 11134-01280AA	1	

* Parts which are not discribed in the CASSETTE DECK list are not serviceable.
If you need any other parts except those described, apply CASSETTE DECK ass'y.

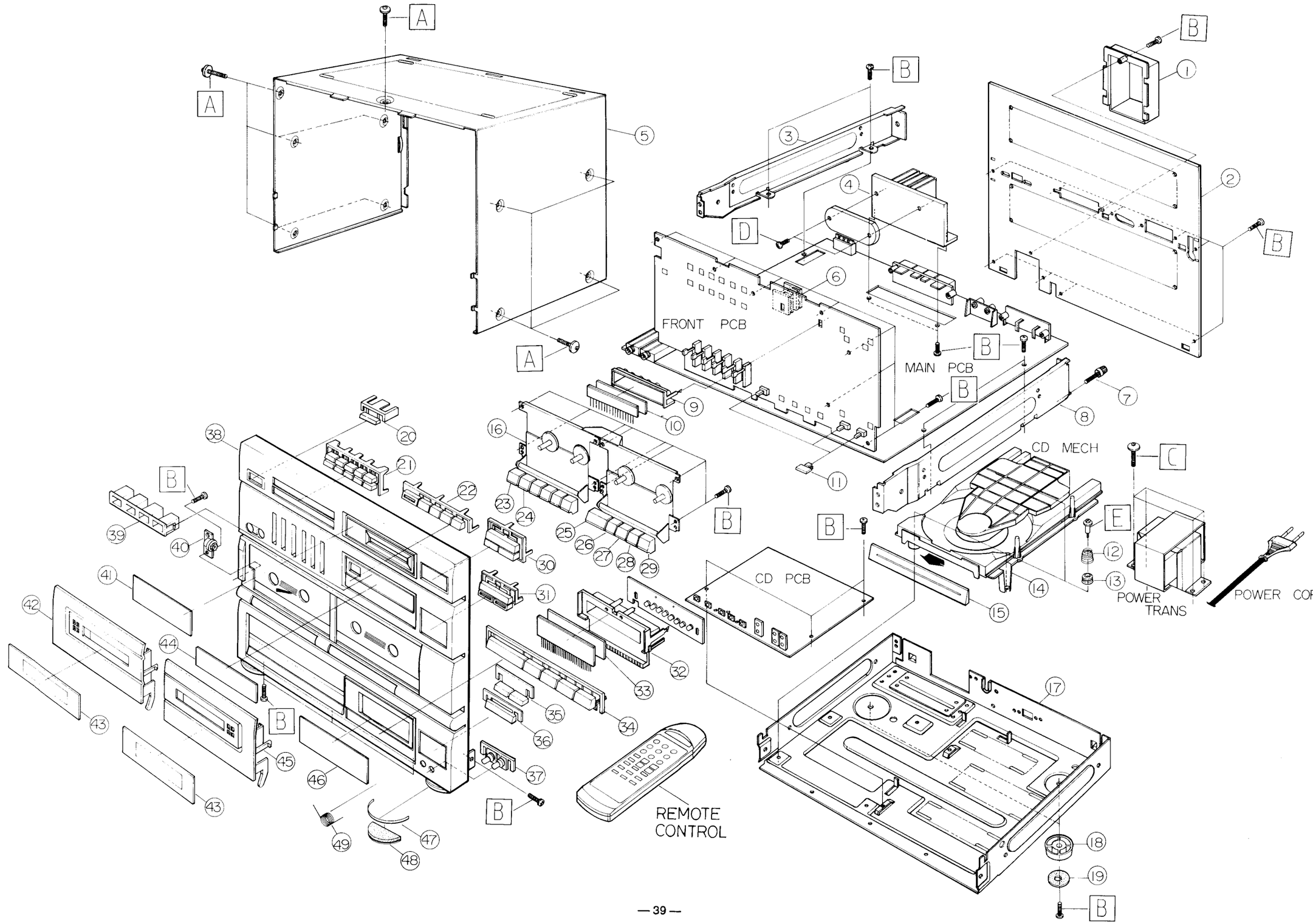
3. MAIN

● MECHANICAL PARTS

LOCATION No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
1	16033-505-410	COVER-P/T ; HIPS 94HB BLK SCM6900	1	
2	16131-501-310	COVER-REAR ; H/BOARD 3.2T SCM7800	1	OPTIONAL SINGLE VOLTAGE
	16131-501-320	COVER-REAR ; H/BOARD 3.2T 2VOLT	1	OPTIONAL DOUBLE VOLTAGE
3	16122-536-010	FRAME-L ; SECC 0.8T	1	
4	15009-510-840	HEAT-SINK ASS'Y ; ALS	1	
5	16100-500-210	CABINET-TOP ; VINYL STEEL 0.75T	1	
6	15684-507-610	HEAT-SINK ; EXTR AL WHT	1	
7	13104-501-630	TERMINAL-SCREW ; SPCI + ABS BLK	1	
8	16122-536-110	FRAME-R ; SECC 0.8T	1	

LOCATION No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
9	16602-503-110	HOLDER-LED, T ; ABS WHT	1	
10	17654-571-710	FILTER-TUNER ; PC0.5T	1	
11	17624-637-410	KNOB-PUSH ; ABS BLK	3	
12	16674-570-320	SPRING-DECK (B) ; STS #27	4	
13	16804-517-820	RUBBER-DECK ; BUTYL RUBBER	4	
14	19840-000-110	DECK-CD (DRAW) ; CMS-55	1	
15	17643-525-470	DOOR-GUIDE ; ABS BLK (GOLD SILK)	1	
16	14929-104-961	TAPE-DECK ; ADR 1506FW	1	
17	16101-502-110	CABINET-BOTTOM ; SECC 0.8T	1	
18	16074-503-010	HOLDER-FOOT ; HIPS BLK	2	
19	16804-521-710	FOOT-CONTACT ; EVA RUBBER	2	
20	17622-502-310	KNOB-POWER ; ABS 94HB BLK	1	
21	17621-500-210	KNOB-MEMORY ; ABS BLK	1	
22	17622-504-710	KNOB-FUNCTION ; ABS BLK	1	
23	17623-574-510	KNOB-REC ; ABS 94HB	1	
24	17623-574-410	KNOB-PLAY, S ; ABS 94HB	1	
25	17623-574-610	KNOB-PLAY, L ; ABS 94HB	1	
26	17623-574-420	KNOB-REW ; ABS 94HB	2	
27	17623-574-430	KNOB-F.F ; ABS BLK	2	
28	17623-574-440	KNOB-ST/EJ ; ABS BLK	2	
29	17623-574-530	KNOB-PAUSE ; ABS BLK	2	
30	17622-504-510	KNOB-TUNER ; ABS BLK SILK	1	
31	17622-504-610	KNOB-VOLUME ; ABS BLK	1	
32	16601-500-710	HOLDER-CD, LCD ; ABS WHT + TI02	1	
33	17654-571-810	HOLDER-CD, LCD ; PC 0.5T AMBOR	1	
34	17622-505-010	KNOB-CD, FUNC ; ABS BLK	1	
35	17622-504-810	KNOB-CD, PLAY ; ABS BLK	1	
36	17622-504-910	KNOB-CD, SKIP ; ABS BLK	1	
37	17623-588-410	KNOB-CD, INTRO ; ABS BLK	1	
38	16000-536-010	CABINET-FRONT ; HIPS BLK	1	
39	16604-541-410	HOLDER-LED, FUN ; ABS WHT + TI02	1	
40	15214-506-011	DAMPER ASS'Y ; ACETAL	2	
41	17654-569-610	WINDOW-TUNER ; PC0.5T	1	
42	17642-545-310	DOOR-CASSETTE, A ; ABS BLK	1	
43	17654-569-910	WINDOW-DOOR ; PC 0.5T	2	
44	17654-569-710	WINDOW-FUNCTION ; PC 0.5T	1	
45	17642-545-410	DOOR-CASSETTE, B ; ABS BLK	1	
46	17654-569-810	WINDOW-CD ; PC 0.5T	1	
47	17824-526-710	DECO-FOOT ; AL 0.3T	2	
48	16174-504-210	CUSHION-FOOT ; RUBBER SPONGE	2	
49	16674-568-910	SPRING-DOOR ; SUS PI0.9	2	
50	14909-501-210	REMOCON-ASS'Y ; SCM7550	1	
A	17154-100-640	SCREW-TAP RH SPEC ; 2S-3 x 8 FE FZB	10	
B	17458-230-101	SCREW-TAP TITE BH ; 2S-3 x 10 FE FZY	45	
C	17154-100-630	SCREW-TAP RH SPEC ; 2S-3 x 8 FE FZY	4	
D	17458-230-101	SCREW-TAP TITE BH ; 2S-3 x 10 FE FZY	2	
E	17094-504-310	SCREW-STUD (B) ; TAP 2S-3 x 8	4	

● **EXPLODED VIEW (MAIN)**



■ ELECTRICAL PARTS LIST

⚠ indicates parts for circuit safeguarding purposes. Therefore, when replacing, be sure to use specified parts only.

1. MAIN SECTION

LOCATION No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
RR6	11048-577-221	R-METAL OXIDE ; RS2T 220-J MINI TYPE	1	⚠
RR7, RR8	11048-477-102	R-METAL OXIDE ; RS1T 1K-J MINI TYPE	3	⚠
AR1, 2	11058-223-101	R-FUSIBLE ; CRF 1/4W 100-J	2	⚠
RR10	11048-577-331	R-METAL OXIDE ; RS2T 330-J MINI TYPE	1	⚠
RR1	11058-477-109	R-FUSIBLE ; RF1T 1-J	1	⚠
RR8	11048-477-391	R-METAL OXIDE ; RS1T 390-J MINI TYPE	1	
AR8L, 8R	11048-477-479	R-METAL OXIDE ; RS1T 4.7-J MINI TYPE	2	
CSVR1, ISR1	11249-102-024	VR-SEMI TAPE-H ; DVN-DJA A03B53 (5K)	1	
ISR3	11249-102-034	VR-SEMI TAPE-H ; DVN-DJA A03B14 (10K)	1	
ISR2	11249-102-064	VR-SEMI TAPE-H ; DVN-DJA A03B54 (50K)	1	
IC13, IR9DN	11447-910-103	CONDENSER AXIAL-LEAD ; 16V EP050 Y10000-N	2	
FC3	11448-010-223	CONDENSER AXIAL-LEAD ; 25V TP 050F22000-Z	1	
IC14, 15	11449-518-101	CONDENSER AXIAL-LEAD ; 50V UP050 B100-K	2	
KC3L, 3R, MC2, 4	11449-518-102	CONDENSER AXIAL-LEAD ; 50V UP050 B1000-K	4	
RC4, 5, 6	11609-105-222	C-ELECTROLYTIC ; SMS T 35V 2200M	2	⚠
RC11	11609-365-473	GOLD CAPACITOR ; EEC-S5R5H473 (5.5V0.047F)	1	
OTC1, 3	11829-512-030	C-TRIMMER ; TZ03R 20PF	2	
OTC2, 4	11829-512-030	C-TRIMMER ; TZ03R 20PF	2	LW BAND
BIC4	12109-401-270	IC-FUNCTION ; LC7821	1	
RIC1	12109-401-690	IC-REGULATOR ; MC7812C	1	
JIC1	12109-401-840	IC-PRE/REC ; TA8189N	1	
IIC1	12119-102-720	IC AM, FM IF ; LA1851N	1	
BIC5	12119-202-690	IC-SWITCH ; LC-4966	1	
AIC1	12119-208-500	IC-POWER ; STK 4121-2	1	
MIC1, BIC3, PIC1	12119-401-630	IC-OP DUAL AMP ; MC4558S	3	
RQ1	12139-103-560	TRANSISTOR ; KSA 614-O	1	
FQ2, OQ4	12139-601-200	TRANSISTOR SILICON ; 2SK. 583	2	
IQ3	12149-101-520	TRANSISTOR ; KSA733-Y, TAPE	1	
IQ4	12149-101-520	TRANSISTOR ; KSA733-Y, TAPE	1	LW BAND
LQ1	12149-301-820	TRANSISTOR ; KSC1222-L, TAPE	1	
FQ1	12149-301-860	TRANSISTOR ; KSC838-O, TAPE	1	
OQ1, 2, 3	12149-301-900	TRANSISTOR ; KSC945-O, TAPE	3	LW BAND
JQ1L, 1R	12149-301-900	TRANSISTOR ; KSC945-Y, TAPE	13	
JQ2L, 2R, 3L, 3R, CQ1, 2, 5				
RQ2, KQ1, AQ1L, 1R				
KQ2L, 2R, KQ3L, 3R	12149-301-930	TRANSISTOR ; KSC1008-Y, TAPE	4	
RQ3	12149-401-070	TRANSISTOR ; KSD73-Y	1	⚠
CQ3, 4, 5, 7, IQ1, RQ5	12159-301-330	TR-DIGITAL ; KSR2003, TAPE	6	
KQ1L, 1R, IQ2, RQ4	12159-301-780	TR DIGITAL ; KSR 1003	4	
MQ1	12159-301-790	TR DIGITAL ; KSR1009	1	
RD2 ~ 7, CD1, 2	12169-201-080	DIODE-RECTIFIER ; 1N 4001, TAPE	8	⚠
RD1	12169-219-210	DIODE-RECT ; 2KBP02	1	⚠
SD1, 2, 3, 4, AD2, 3	12169-301-290	DIODE-SW ; 1SS53/1N4148, CT : 6PF	24	
RD3, BD3, 4, 6, CD3				
CD4, 5, 7 ~ 18				
RZD2, RZD1	12169-403-910	DIODE-ZN ; 1W11.4-12.6V UZP-12B	2	⚠
RZD3	12169-404-110	DIODE-ZN ; RD5.6FB/UZP-5.6B	1	
OVVC1	12169-501-005	DIODE ; KV 1236	1	
KL1L, 1R	12429-306-113	COIL-BIAS TRAP ; FB895-85A	2	
IT1	12619-020-067	COIL 7 CAN ; AB FM BLU	1	
IT2	12619-030-005	COIL-CAN ; AC 450KHz YEL	1	
OT2	12619-047-202	COIL-CAN ; AD 510UH 220KHz BRN	1	LW BAND
OT1	12619-047-203	COIL-CAN ; AD 110UH 796KHz RED	1	
OL1	12619-411-000	MW ANT COIL ; 2C7BLRZ-K5026N-KR	1	
OL2	12619-566-913	TRANS-TEN, CAN ; AF 2.4MH FLW RED	1	LW BAND
LT1	12619-573-071	COIL-CAN ; AG 2.2MH F NON BLK	1	
SPK	13303-500-620	TERMINAL-BOARD PUSH, N ; 4P PUSH HOOK	1	
FM	13304-504-010	ANT TER, BOARD ; A02-1064	1	
MIC, H/P	13339-113-020	JACK-HEADPHONE ; HLJ2316-01-2040 12/9.5M/M	2	
PHONO	13339-403-020	JACK-AUX ; 8.3PI PHOND TYPE	1	
IX1	14539-504-100	CERAMIC RESONATOR ; CSB456F15	1	
FCF1, 2	14529-301-750	FILTER-CERAMIC ; SFE10.7MS3G-A	2	
ICF1	14529-304-610	FILTER CERAMIC ; AHCM2-450BL	1	
	14929-421-010	DECK-CD (DRAW) ; CMS-55/A	1	
AM LOOP-ANT	14509-240-030	ANT AM LOOP ; 1200M/M 2.5MHz 26UH HOUSING	1	
FM T-ANT	14509-470-030	ANT-FM/T ; 150 + – 5% OHM L = 3500MM	1	
F.E.P	14519-815-020	FM FRONT EBDPACK ; FAF2 735H	1	

2. FRONT SECTION

LOCATION No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
QVR1, 2, 3, 4, 5	11239-115-033	VR-EQ ; RS20H123J304 53B/STICK	5	
QVR6	11239-115-043	VR-BAL ; RS20H114J30453W/STICK	1	
QC7L, 7R	11447-619-332	CONDENSER AXIAL-LEAD ; 16V EP050 X3300-M	2	
QC8L, 8R, QC5L, 5R	11447-919-103	CONDENSER AXIAL-LEAD ; 16V EP050 Y10000-M	4	
QC6L, R, UC3, 4 QC2L,	11449-518-102	CONDENSER AXIAL-LEAD ; 50V UP050 B1000-K	4	
2R	11449-117-470	CONDENSER AXIAL-LEAD ; 50V UP050 SL47-J	2	
QC1L, 1R	12109-401-350	IC-PLL U-COM ; LC7230-8347	1	
UIC1	12119-101-830	IC-E/C VR ; TC9153 AP	1	
QIC3	12119-202-880	IC-LINER ; KA22234 (5G/EQ)	1	
QIC1	12119-401-630	IC-OP AMP ; MC4558C	2	
QIC2, 4	12149-301-900	TRANSISTOR ; KSC 945-Y, TAPE	5	
UQ2, BQ1, 3, 4, 5	12149-301-930	TRANSISTOR ; KSC1008-Y, TAPE	1	
HQ1	12159-301-330	TR-DIGITAL ; KSR2003, TAPE	2	
QQ3, 4	12159-301-780	TR DIGITAL ; KSR1003	2	
QQ1, 2	12159-301-790	TR DIGITAL ; KSR1009	2	
QQ5, 6	12159-301-810	TR DIGITAL ; KSR2007	1	
UQ6	12169-301-290	DIODE-SW ; 1SS53/1N4148, CT : 6PF	20	
UD2 ~ 5, UD8 ~ 17,				

LOCATION No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
QZD1, 2	12169-404-130	DIODE-ZN ; 500MW 5.3-5.9V UZ-5.6BM	2	
HZD1	12169-404-850	DIODE ZENER ; 500MW UZ-10BSA TAPING	1	
REMO-EYE	12199-101-070	REMOCON EYE ; SBX1610-02	1	
HLD1, 2, 3, 4, 5	12309-117-510	LED-AMBER ; SEL3913K	5	
HLD6, BLD1-4	12309-001-210	LED ; SLV31DC TAPE	5	
ULCD1	12339-104-650	LCD DTS ; LE-0605CP	1	
ASW1, CSW1, JSW1	13529-203-930	SW-PUSH ; SPEA122S C011	3	
US1-21	13559-901-100	SWITCH-TACT ; SLJVBE029A	21	
UX1	14539-003-010	CRYSTAL-UNIT ; HC18-U4.5MHz	1	

3. CD SECTION

LOCATION No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
R101, 102	11058-277-229	R-FUSIBLE ; RF 1/4T 2.2-J	2	⚠
R109, 110	11058-377-011	R-FUSIBLE ; RF 1/2T 1J	2	⚠OPTIONAL
R104	11058-277-479	R-FUSIBLE ; RF 1/4T 4.7-J	1	⚠
VR201	11249-002-080	VR-SEMI FIXED ; VZ066L, 1KB HDK	1	OPTIONAL
VR201	11249-002-120	VR-SEMI FIXED ; VZ068TLT 1KB HDK H TYPE	1	OPTIONAL
VR301, 302, 303, VR304	11249-102-044	VR-SEMI TAPE-H ; DVN-DJA A03B24 (20K)	4	
C211, 301, 309	11447-619-472	CONDENSER AXIAL-LEAD ; 16V EP050 X4700-M	3	
C305, 313, 404, 604 C540, 545, 609, 610	11447-919-103	CONDENSER AXIAL-LEAD ; 16V EP050 Y10000-M	8	
C504, 505	11449-118-229	CONDENSER AXIAL-LEAD ; 50V UP 050 SL2.2-K	2	
C215, 303	11449-518-102	CONDENSER AXIAL-LEAD ; 50V UP050 B1000-K	2	
IC501	12109-401-310	IC-D/A CONVERTER ; KDA0316LN	1	
IC501	12109-310-840	IC-D/A CONVERTER ; LC7881-C	1	
IC102	12109-401-750	IC REGULATOR ; MC79L05	1	⚠
IC401	12119-203-770	IC-DS PROCESSOR ; KS5990/KS59910	1	
IC301	12119-203-790	IC-RF AMP ; KA9201	1	
IC201	12119-203-840	IC-SS PROCESSOR ; KA830 DUAL VOLTAGE	1	
IC502, 503	12119-401-760	IC-OP AMP ; NJM2068SD/UPC4570HA	2	
IC101	12119-601-770	IC-REGULATOR ; MC7805	1	⚠
IC601	12109-303-690	IC-MICOM ; KS56C 820-06	1	
Q206, 209	12149-101-560	TRANSISTOR ; KSA708-Y, TAPE	2	
Q204, PQ2	12149-101-590	TRANSISTOR ; KSA931-Y, TAPE	2	
Q202	12149-201-480	TRANSISTOR ; KSB 772-Y	1	
Q101	12139-103-560	TRANSISTOR ; KSA614-O	1	
Q301	12149-202-050	TRANSISTOR ; KSB564A-Y-	1	
Q500, 501, 503, 504 Q601, PQ1	12149-301-900	TRANSISTOR ; KSC 945-Y, TAPE	6	
Q203, PQ3	12149-301-910	TRANSISTOR ; KSC2331-Y, TAPE	2	
Q205, 208	12149-301-930	TRANSISTOR ; KSC1008-Y, TAPE	2	
Q201	12149-401-950	TRANSISTOR ; KSD 882-Y	1	⚠
Q506, 507, SQ5, 6, 7, 8	12159-301-330	TR-DIGITAL ; KSR2003, TAPE	6	
Q505, SQ1, 2, 3, 4	12159-301-780	TR DIGITAL ; KSR 1003	5	
Q207	12159-301-800	TR DIGITAL ; KSR 1007	1	
D101, 102, 103, 104 D606, PD1, 2	12169-201-080	DIODE-RECTIFIER ; 1N 4001, TAPE	7	⚠
D301, 601, 602 D603, 604, 605, 805	12169-301-290	DIODE-SW ; 1SS53/IN4148, CT : 6PF	7	OPTIONAL
D301, 601 ~ 605, D805	12169-301-400	DIODE-SWITCH ; 1N4148M ROHM (SMALL)	7	OPTIONAL

LOCATION No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
ZD101	12169-404-790	DIODE ZENER ; 500MW UZ-5.6BSB TAPING	1	
LED1 ~ 8	12309-117-520	LED-AMBER ; SEL3913K TP5 TAPPING	8	
Q101	12139-103-560	TRANSISTOR ; KSA614-0	1	
LCD1	12339-102-320	LCD-CD ; HLC8036-012310	1	
SW1, 2, 3, 4, 5	13559-102-010	SWITCH-TACT ; JIP1236A 160G	5	
SW6, 7, 8	13559-901-130	TACT SWITCH ; SKHTLA021A	3	
FB1, 2, 3	14049-033-420	FERRITE BEAD ; INDVCTOR 3875S TAPE	3	
X601	14534-504-040	CERAMIC-RESONATOR ; CSA4.00MG	1	
X401	14539-401-050	X-TAL ; HC18U 16.9344MHz	1	

4. GENERAL SECTION

1) AC 110V/220V UNIT

LOCATION No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
P/TRANS	12869-222-500	TRANS-POWER ; SCM7800 110/220V	1	⚠
VOLTAGE SELECTOR	13599-502-020	VOLT SELECTOR ; PCB 00120353A (354) 110V/220V	1	⚠
POWER CORD	13059-808-291	POWER CORD ASSY ; CP2 300V 3A KS W/S 200M/M	1	⚠
	14709-241-240	FUSE ; T250V 1.6A 20 EUR	1	⚠
	14709-241-160	FUSE ; T250V 0.63A	1	⚠

2) AC 120V UNIT

LOCATION No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
P/TRANS	12869-222-510	TRANS-POWER ; SCM7800 120V	1	⚠
	13059-808-301	POWER CORD ASS'Y ; KKP-8WSPT-2 7FT 270M/M W/S	1	⚠
	14709-241-160	FUSE ; T250V 0.63A	1	⚠

3) AC 230V UNIT

LOCATION No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
P/TRANS	12869-222-540	TRANS-POWER ; SCM7800 230V	1	⚠
POWER CORD	13059-808-341	POWER CORD ASSY ; KKP 419C/B161 VDE W/S 300M/M	1	⚠
	14709-241-160	FUSE ; T250V 0.63A	1	⚠

4) AC 110V-130V/220V-240V UNIT

LOCATION No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
P/TRANS	12869-222-530	TRANS-POWER ; SCM7800 115/230V	1	⚠
POWER CORD	13059-808-341	POWER CORD ASSY ; KKP419C/B161 VDE W/S 300M/M	1	⚠
	14709-241-160	FUSE ; T250V 0.63A	1	⚠
	14709-241-240	FUSE ; T250V 1.6A 20 EUR	1	⚠

5) AC 240V UNIT

LOCATION No.	CODE No.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
P/TRANS	12869-222-520	TRANS-POWER ; SCM7800 240V	1	⚠
POWER CORD	13053-505-011	POWER CORD ASSY ; BS6500 GTBS 2.5M W/S 220M/M	1	⚠
	14709-241-160	FUSE ; T250V 0.63A	1	⚠

■ ABBREVIATION LIST

AC	:	Alternating Current
Addr	:	Address
ADJ.	:	Adjustment
AGC	:	Automatic Gain Control
ALC	:	Automatic Level Control
AM	:	Amplitude Modulation
AMP	:	Amplifier
AMPS	:	Automatic Music Program Search
ANT.	:	Antenna
ASSY	:	Assembly
BAL	:	Balance
BLK	:	Black
BLU	:	Blue
BPF	:	Band Pass Filter
BRKT	:	Bracket
CF	:	Ceramic Filter
ch, CH	:	channel
cm	:	centimeter
COM	:	Common
CON MIC	:	Condenser Microphone
D	:	Depth
D/A Convertor	:	Digital/Analog Convertor
dB	:	deciBel
DC	:	Direct Current
DEC	:	Decoder
DET	:	Detector
DEV	:	Deviation
DSP	:	Digital Signal Processor
DTS	:	Digital Tuning System
EA	:	Each
E-HEAD	:	Erase Head
EQ	:	Equalizer
FF or F-FWD	:	Fast Forward
F/F	:	Flip Flop
Fig.	:	Figure
FM	:	Frequency Modulation
FREQ.	:	Frequency
GND	:	Ground
GRN	:	Green
GRY	:	Gray
H	:	Height, High
Hz	:	Hertz
IC	:	Integrated Circuit
IF	:	Intermediate Frequency
IFT	:	Intermediate Frequency Transformer
I/O	:	Input/Output
KHz	:	Killohertz
Kg	:	Killogram
L	:	Left, Low
LCD	:	Liquid Crystal Display
LED	:	Light Emitting Diode
LPF	:	Low Pass Filter
LW	:	Long Wave
Max	:	Maximum
MHz	:	Megahertz
min	:	Minimum
MOD	:	Modulation
MPX	:	Multiplex
MW	:	Medium Wave
NF	:	Negative Feedback
OP AMP	:	Operational Amplifier
ORG	:	Orange
OSC	:	Oscillator
PB	:	PlayBack
PCB	:	Printed Circuit Board
PLL	:	Phase Lock Loop
P/T	:	Power Transformer
R	:	Right
RAM	:	Random Access Memory
REC	:	Record
REG	:	Regulator
REW	:	Rewind
RF	:	Radio Frequency
ROM	:	Read Only Memory
R/P	:	Record/Play
sec	:	Second
SSG	:	Standard Signal Generator
SSP	:	Servo Signal Processor
ST	:	Stereo
ST/EJT	:	Stop/Eject
SW	:	Switch, Short wave
TP	:	Test Point
TR	:	Transistor
TRANS	:	Transformer
V	:	Volt
VIO	:	Violet
VCO	:	Voltage Controlled Oscillator
VOL	:	Volume
Vpp	:	Voltage peak to peak
VR	:	Volume
Vref	:	Reference Voltage
V/SEL	:	Voltage Selector
VTVM	:	Vaccum Tube Volt Meter
VVC	:	Voltage Variable Capacitance
W	:	Watt, Weight
WHT	:	White
X	:	Crystal
YEL	:	Yellow